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Pokyny pro vypracování

Cílem diplomové práce je vytvořit návrh uživatelského rozhraní mobilní aplikace sociální sítě, která uživatelům umožní rychle a jednoduše poznat nové lidi v jejich okolí. Aplikace umožní uživateli vytvořit si svůj profil, komunikovat s ostatními uživateli a zjednoduší organizování face-to-face setkání.

Postupujte dle následujících kroků:

- Proveďte rešerši, analyzujte alespoň 4 sociální sítě.
- Analyzujte požadavky cílové skupiny uživatelů.
- Navrhněte vhodný koncept vaší aplikace na základě předešlých analýz a požadavků zadání.
- Navrhněte vhodné uživatelské rozhraní, vytvořte wireframy aplikace.
- Proveďte jednoduché testování možností aplikace a logiky návrhu pomocí wireframů.
- Upravte wireframy na základě výsledků.
- Vytvořte funkční hi-fi prototyp aplikace dle wireframů.
- Proveďte uživatelské testování hi-fi prototypu.
- Upravte prototyp dle zjištěných nedostatků.
- Zhodnoťte přínos aplikace a použitelnost prototypu.

Seznam odborné literatury

Dodá vedoucí práce.

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V Praze dne 15. února 2019



**FACULTY
OF INFORMATION
TECHNOLOGY
CTU IN PRAGUE**

Master's thesis

Social Network for Erasmus Students

Bc. Marianna Gedrová

Department of Software Engineering
Supervisor: Ing. Pavel Žíkovský, Ph.D.

June 25, 2019

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I am thankful to all of my friends who have been with me through both, nice and hard times - we experienced a lot together, I could not have done this without you.

Declaration

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In Prague on June 25, 2019

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Abstrakt

Táto diplomová práca sa zaoberá analýzou procesov súvisiacich s výmenným pobytom v zahraničí v rámci programu Erasmus a následným návrhom sociálnej siete pre študentov programu Erasmus. Diplomová práca si za cieľ kladie návrh sociálnej siete, ktorá zlepší život študentov na výmennom pobyte zjednodušením spoznávania sa s ďalšími študentmi, komunikácie s nimi, zlepšením prehľadu o udalostiach a ďalších vecí, ktoré môžu vyplývať z analýzy.

Súčasťou diplomovej práce sú rešerše a porovnanie existujúcich riešení, analýza procesov spojených s výmenným pobytom a interaktívny prototyp aplikácie otestovaný s reálnymi užívateľmi.

Kľúčová slova sociálna sieť, Erasmus, užívateľská skúsenosť, UX návrh, prototypovanie, testovanie použiteľnosti

Abstract

This diploma thesis deals with analysis of processes related to Erasmus student exchange and design of a social network for Erasmus students. The goal of the thesis is designing a social network app which will improve Erasmus

students' lives abroad by simplifying meeting new people, attending events and all other activities found during analysis.

The thesis describes already existing solutions, analyzes the processes and proposes a solution based on the results of the analysis. The solution is an interactive, high fidelity prototype of the designed app tested with real users and improved according to the usability test results.

Keywords social network, Erasmus, user experience, UX design, prototyping, usability testing

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Introduction

"Once Erasmus, always Erasmus." [3] This is a perfect expression of the emotion which is left in students after they finish their exchanges. This life-changing experience is indeed so strong that many students returning from their stay abroad to their home countries suffer from post-erasmus depression [4] and it takes some time for them to get used to the daily routine.

Although, plenty of the students who participated in the Erasmus program do not want to live the same way they did before. They often try to apply for another Erasmus exchange or they search opportunities in various volunteering, internship or work programs abroad. If they do not have the chance because of time or their studies, they stay in touch with this community for instance via various organizations for exchange students, dormitory clubs, they help exchange students as university buddies or they may try to improve exchange students' lives through their thesis.

The Erasmus program exists for over thirty years and thanks to its massive growth, the Erasmus exchange is now possible for about two million students yearly. [5] As we live in times where smart phones are not any luxury anymore and as it became a standard, there are apps for everything, it is interesting that there are no apps directly connected to students' life during a student exchange. And this is how an idea for a social network app for Erasmus students was raised. The app purpose is helping Erasmus students to easily meet new people, communicate with their Erasmus contacts and make their life abroad easier.

Even though there are many already existing social networks, there is still place for new ones on the market. The key to create a successful social network is to determine a target group and its needs and keep it simple. People naturally choose a simple, user-friendly product over one which may consists of better functions but people are overwhelmed while its use. So a good design should be a priority and included in the very beginning of every software development process.

The goal of my diploma thesis is this first stage of the design development

- to design the app which will improve Erasmus students' lives abroad by simplifying meeting new people, attending events and all other activities found during the user requirements analysis. The thesis analyzes already existing solutions, the student exchange processes and problems and proposes some solutions. The result of will be a prototype of the app tested with real users and improved according to the usability test results.

State-of-the-art

Nowadays, the social networks are extremely popular especially among young people who tend to use more than one. Erasmus students are not an exception. According to our research, there are no social networks intended to reach students participating in an exchange. There are, however, common social networks which are used while an exchange but, as will be described in this chapter, these are not a good solutions for the specific social group with all the specific situations connected with a student exchange, such as simple events management, ease of meeting new students, changing stuff that students need to buy and they cannot take it back home so they throw it away. There are some social network examples described in this chapter. In the end of the chapter, the pros and the cons of these apps are summed up.

1.1 Social network

1.1.1 Definition

We define social network sites as web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system. [6]

1.1.2 Description

There is a variety of social network sites developed during last few decades. They share common idea and main features but they handle the features differently because their purposes differ.

Profile of a user is a unique page with some information about the user. The common approach is that user is given questions, fills out the answers and then the profile is generated. The profile may contain information about name, date of birth, nationality, relationship status, religion, hobbies, etc.

Most of the information is not required. A part of a profile is also mostly a profile picture uploaded by user. The user is often allowed to set with whom he wants to share provided information by choosing audience.

Network of contacts is a list of other users connected with the user. The functionality allows user to add or remove others from his contacts. It can be also divided to smaller groups according to common characteristics of the users in the list to make the list better organized, for example putting contacts of parents and siblings in a group called “Family”. The visibility of the list can be normally also turned on or off. The social network site connections common name is “friendship” or “following”. A friendship needs to be accepted from both sides. Following describes one-sided relationship.

Post is a content shared by user on a social network site. The term represents text messages, pictures, videos and other forms varying according to each social network site. A post can be reacted on by other users as in a forum. There are two forms of reactions, default and non-default. The default reactions are usually few icons or sentences with various feedback. The non-default form of reaction is a comment which allows user to use his own message.

Social network news feed displays all posts relevant to user according to his connections. Time line in term of social networking is a chronological list of user’s posts usually connected with a profile.

Instant messaging is the form of communication where people share messages by sending directly to a chosen person or a group of people. The main form of message content is text but social networks often support the same form of content as posts’ form.

1.1.3 Most popular social network sites

The social network site with the highest amount of active users in May 2018 is Facebook with 2.2 billion active users. Facebook is followed by Youtube with 1.8 billion active users and the third most popular social network site is Instagram which has 0.8 billion active users.

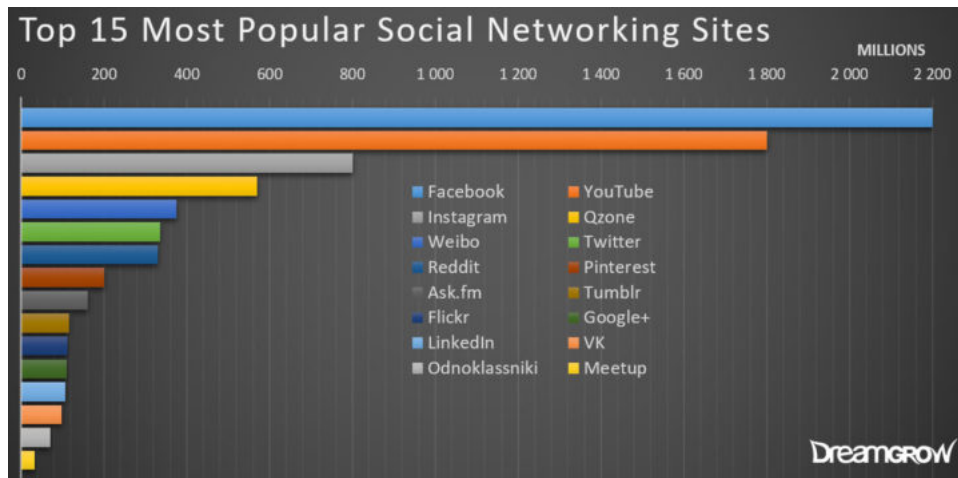


Figure 1.1: Popular social networks graph

1.1.4 Device usage

Social networks that will be described are available from both, browser and smart phone app. Latest update of "Mobile vs Desktop Traffic in 2019" study demonstrates the growth of the mobile web last year (2018) versus the desktop. For most sites, the majority of their traffic comes from mobile devices (58%). Therefore, the description of existing solutions will be done for smart phone apps. [7]

1.2 Existing social networks

While the study and evaluation of existing social networks, I will describe these six features:

- Profile
I will focus on what user needs to do to create a user's profile and what information it contains.
- Connections
Social network, as the name says, is about connecting with other people. I will compare the way how user interacts with other users, how he can create his own "social network".
- News feed
I will describe various understanding of news feed among social networks.
- Groups

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As one of the purposes of the social network for Erasmus students is to connect people with various interests, I will take a look at this possibility across existing social networks.

- Events

Another feature which is supposed to be needed in an app where the target group is Erasmus students. I will focus on creating and joining events.

- Instant messaging

While studying this essential feature of social network, I will take a look on what message content can be sent and what are other options user has.

The apps were studied using Android phone. After the description with attached screen shots, there will be an comparison and an evaluation of a usability and its asset.

1.3 Facebook

There are two popular Facebook apps, Facebook and Facebook Lite, both with more than 1 billion downloads on Google Play. Facebook Lite may contain less functionality but it is easier to use and also the size of the app is smaller. But I will study the original Facebook app.

1.3.1 Profile

A Facebook profile is an individual's personal account, where he can post updates, upload photos, share videos, maintain a friends list and provide personal information. [8] Information in profile can be set as public and also private. Public content can be seen by anyone, even people off of Facebook or other web sites. Private information can be defaultly seen by "friends" - people who you are connected with but user can also change it to a subset of friends.

Part of Facebook profile is profile picture, cover photo, short bio and various information about user. The information is very detailed so it's divided to logical sections such as Work, Education, Places you've lived, Contact info, Basic info, Family, Relationships, Religious views, Political views, Life events. Beside this information, there are also posts added by used in chronological order. This is called "Timeline". There is a view of profile and information in profile in the picture below.

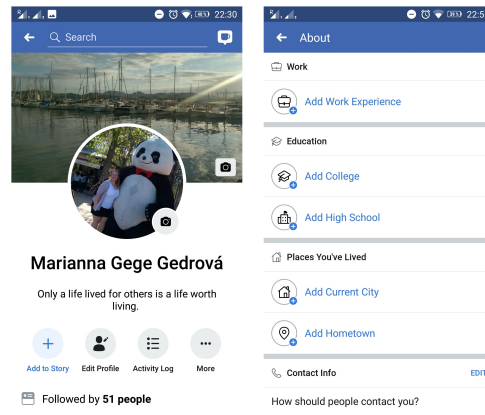


Figure 1.2: Facebook App: profile

1.3.2 Connections

A “Facebook Friend” is a profile added to user account’s network. The future friend requests that he or she can be added to the network and the user confirms the request. It can be done vice-versa. The user is able to see list of his friends and control the visibility of the list via privacy settings. Facebook offers also option of ”following”. Public posts of followed person are displayed in news feed of his follower. In the picture below, there is an example of Jan Novak’s profile. Jan Novak is not a friend with the logged user. By clicking on ”Add friend” button, active user can easily request Jan to become his friend. After the request is sent, the user needs to wait for Jan Novak’s confirmation. User is currently in state of following Jan Novak. On the right side of the picture, there is a screenshot of notifications. There are requests to be confirmed or denied. [9]

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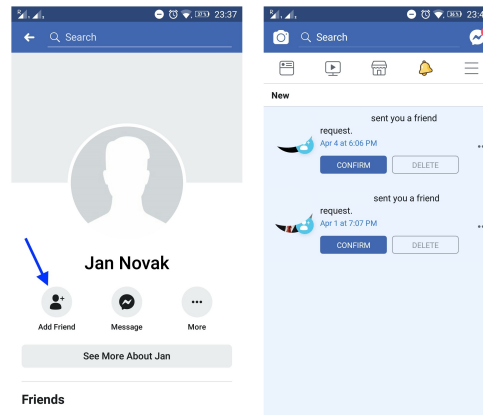


Figure 1.3: Facebook App: friend

1.3.3 News Feed

News Feed is the constantly updating list of stories in the middle of user's home page. News Feed includes status updates, photos, videos, links, app activity and likes from people, Pages and groups that user follows on Facebook. [10] There are two screenshots in the picture bellow. On the left, an example of a post is displayed. There is a lot of information around the post alone. There's information about who posted it, when, what audience it is visible for, number of various emoji reactions, comments, shares and views. The screen after logging in is visible on the right side of the picture. There is immediate possibility to add a post and to view posts by scrolling down.

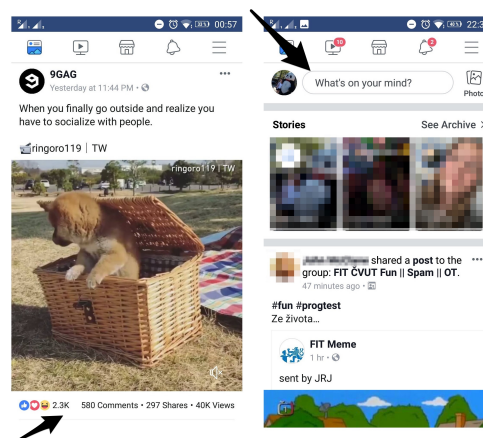


Figure 1.4: Facebook App: news feed

1.3.4 Groups

Groups provide an opportunity to communicate about shared interests with certain people. User can create a group for anything — family reunion, after-work sports team, book club — and customize the group’s privacy settings depending on who the user wants to be able to join and see the group. User does not have to be friend with members of the group in order to communicate with them in the group by adding posts. A group has also wall of posts whose design is similar to News Feed. [11] In the picture below, there are two screenshots of the application. The left screen is an example of a group with name, information about users and also buttons to get to various kind of content within the group as photos, events... More options can be seen by scrolling to the side. While scrolling down, posts of group members are displayed. The right screen is an example of managing user’s groups.

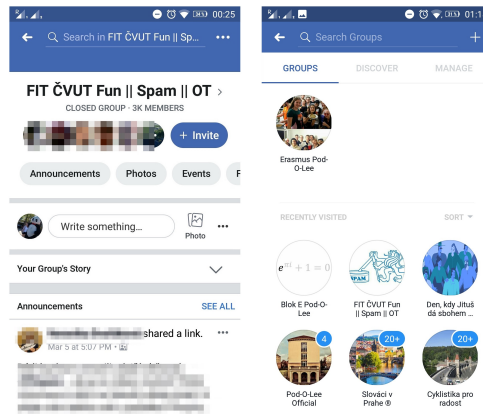


Figure 1.5: Facebook App: group

1.3.5 Events

Events let user organize and respond to gatherings in the real world with other people on Facebook. A user can create or attend an event for anything from a birthday dinner to a school fundraiser. An event creator can control who sees or joins the event. The event usually contains list of invited people divided according to their responses. There are three types of responses: yes, no and "interested". An event has also wall of posts. The event management can be observed in the picture below. It can be easily found in the list of features by clicking on icon in the upper corner. User is offered all kinds of events - events to which he was invited by his friends, events that are similar to the one he already attended or was interested in, events according to the groups, pages and people he follows, etc. Events can be filtered. User can also host his own event by clicking on the button in the lower right corner.

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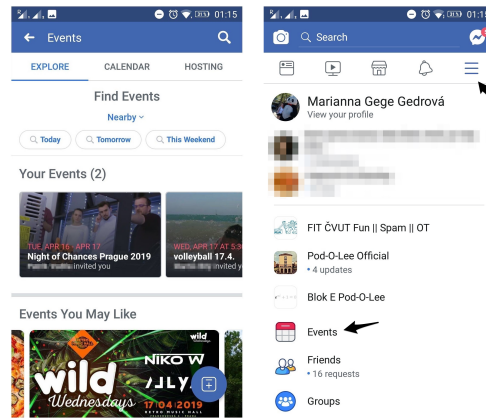


Figure 1.6: Facebook App: event

1.3.6 Instant Messaging

In 2016, Facebook App stopped supporting instant messaging and forced its users to move to its messaging app called Messenger. [12] So when a user clicks on an icon leading to instant messaging, the Messenger app is opened.

The home screen offers user a search field which finds all available users (not only friends), then list of all chats sorted from the latest send or received message in a chat channel and also relatively new feature called "Your story", where are posted pictures. After opening a chat, user is able to send a message in various formats - text messages, photos, videos, voice messages, emojis, animations, gifs and location. The chat also provides a lot of customization options like setting colour of the chats, nicknames of people in the chat, etc.

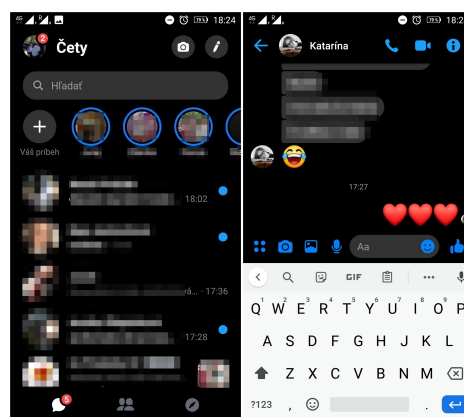


Figure 1.7: Facebook App: instant messaging

1.4 Instagram

Instagram is a free, online photo-sharing application and social network platform that was acquired by Facebook in 2012. Instagram allows users to edit and upload photos and short videos through a mobile app. [13]

1.4.1 Profile

Instagram profile asks user to fill a few of information - name, username, website, bio, e-mail address, phone number and gender. Part of the profile is also every user's post. There are two sections because of two types of posts. One section contains permanent posts and another section, called "Story Highlights", stores "My story" posts specified by user.

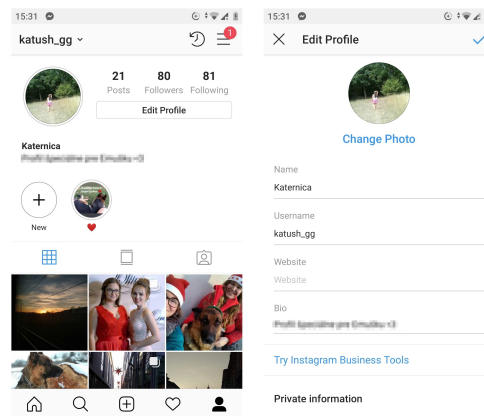


Figure 1.8: Instagram App: profile

1.4.2 Connections

Instagram has two forms of relationship between accounts. When a user has an account, followers are the users that follow his account. These followers can see the user's posts on both the user's profile and on their feed. If user's Instagram is set to private, these are the only people who can see user's posts. They can also view user's Instagram stories and send user direct messages. [14] Following refers to the list of accounts that the user follows on Instagram; these posts appear on user's feed, and user have access to view their profile. User can direct message these followed users, but if they do not follow the user back they may have to approve the message before responding.

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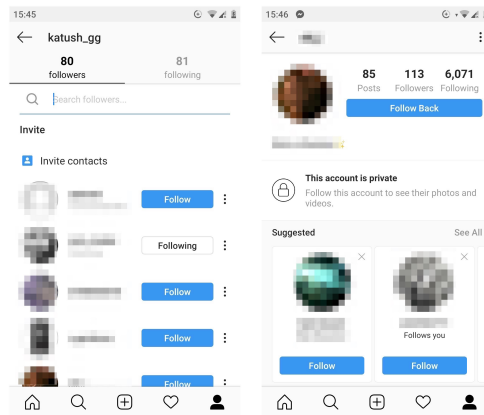


Figure 1.9: Instagram App: following

1.4.3 News Feed

News feed is the first thing a user sees after logging in. It displays all posts from all users followed by logged user. As can be seen in the left part of the picture bellow, there are both types of posts - stories and "permanent" posts. Stories are in small circles, can be seen by clicking on it and they can be scrolled to the left side. The posts are under Stories and it is scrolled vertically. The post is added by the plus button which is placed in the centre so it feels like the main feature and as user, I am supposed to add a post.

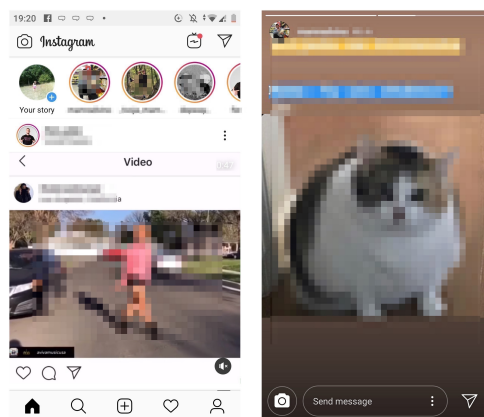


Figure 1.10: Instagram App: news feed

1.4.4 Groups

There are no other ways to group users on Instagram than following. To connect people with similar interests a user creates another account.

1.4.5 Events

There is no special functionality for events on Instagram. User makes propagation of an event just by regular posts.

1.4.6 Instant Messaging

Instagram Direct lets user send messages to one or more people. The content may be photos, videos, posts, profiles, text, hashtags and locations. [15]

Instagram Direct is displayed after tapping on icon in the top right corner of Feed screen. From there, all the sent and received messages can be managed. The camera icon in the row with particular message is a shortcut to send a picture to the particular user. by clicking on the message row, the message is opened (right part of the picture). The input text field is surrounded by icons to simplify the process of sending mostly used message contents.

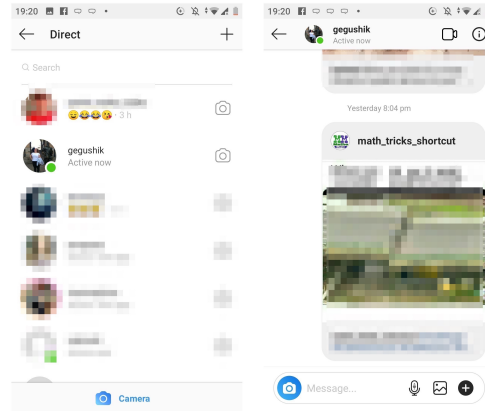


Figure 1.11: Instagram App: instant messaging

1.5 Couchsurfing

Couchsurfing is a service that connects travelers from all around the world. Couchsurfing helps travelers to find a place to stay or the opposite - to share home and hometown with other travelers. There are also regular events organized in 200,000 cities around the world. [16]

1.5.1 Profile

As Couchsurfing served primarily to find a host in a chosen destination, the profile questions encourages user to describe himself with as many details as possible so the host knows what type of person would he hosted and traveller can better imagine who will host him. Information contains references from other users, response rate, information whether the user is accepting guest and if so, type of accommodation. Section "About me" invites user to uncover details about his job, language skills, hobbies, travelling experience, interests and purposes of being a member of Couchsurfing community.

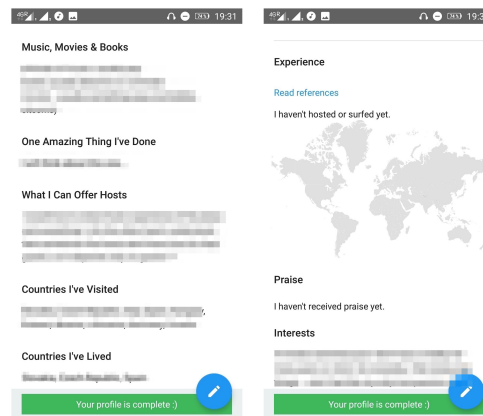


Figure 1.12: Couchsurfing App: profile

1.5.2 Connections

Connected Couchsurfing accounts are named "friends", same as in Facebook. A user requests another user's friendship and waits for the request acception. When the request is accepted, the accounts are "friended". The friends list is accessed by clicking on "More" icon following by clicking on "My friends". The list contains also tabs of all requests that can be accepted or declined and also tab with automatic Couchsurfing friend suggestions. In the picture below, there is a list of "More" options in the left part and friends list in the right part of the figure.

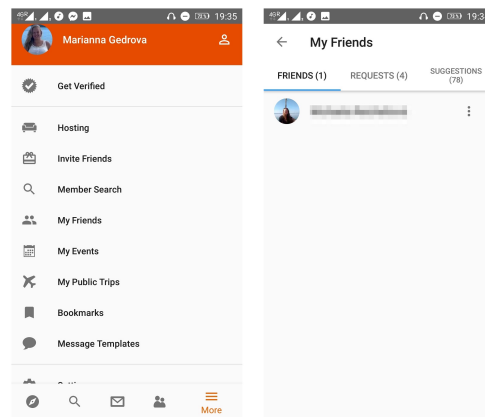


Figure 1.13: Couchsurfing App: friends

1.5.3 News Feed

News Feed in Couchsurfing differs from the ones in already described social networks. It is not typical "pool" of all posts but it sectionalises in three parts: hosts, travelers and events. Also the Search function works with these categories. User looks it up by inserting destination.

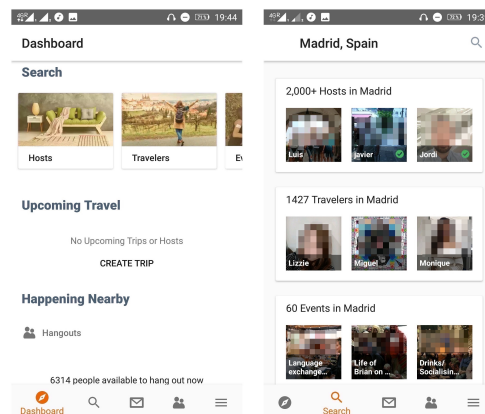


Figure 1.14: Couchsurfing App: news feed

1.5.4 Groups

Couchsurfing does not support groups.

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1.5.5 Events

Couchsurfing Events appears in a list according to a given location. An event in the list attracts attention with a picture and contains all the important information. After opening the detail, user finds also list of attendees and a public discussion connected to an event.

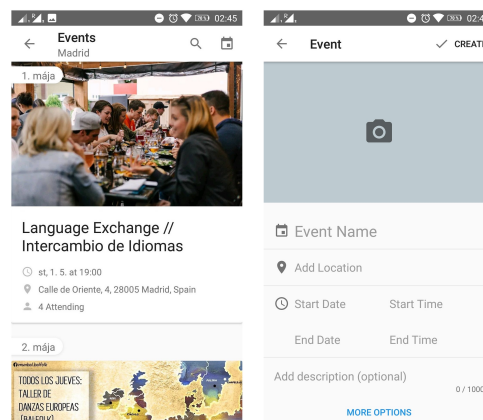


Figure 1.15: Couchsurfing App: event

1.5.6 Instant Messaging

Instant messaging on Couchsurfing is very simple tool allowing exchange of only text content. User sees a history of the chats with individual users and after clicking on a chat in the list, the chat opens (see picture below). Except the text messages exchange, there are three options available after clicking on the plus button: "Request to Stay", "Offer to Host" and "Insert a Message Template". As the main purpose of the app is to find local people to share an experience with, these features are logical choice.

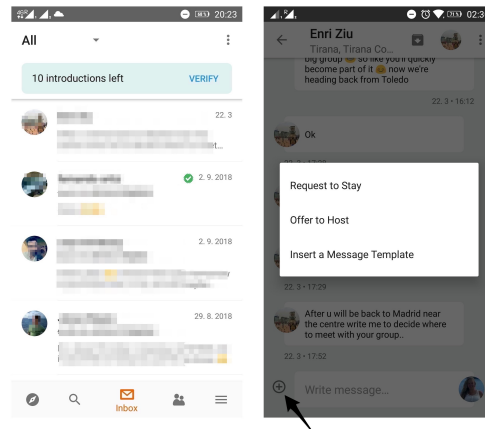


Figure 1.16: Couchsurfing App: instant messaging

1.6 Badoo

Badoo is the largest social network in the world which focuses on dating. It provides the technology for 428 million users. [17]

1.6.1 Profile

As a dating app, Badoo asks user a lot of questions to fill so the profile contains various pieces of information that may concern a potential date. A profile is composed of basic information as name, age, gender, job, education and a lot of other pieces, such as free description, relationship, orientation, height, figure description, address, opinion on having children, smoking, drinking and languages that user speaks. To enrich the profile even more, Badoo let user connect the profile with his other social network accounts. Also, a new feature gives user random interesting questions, for example "What makes you laugh?"

1. STATE-OF-THE-ART

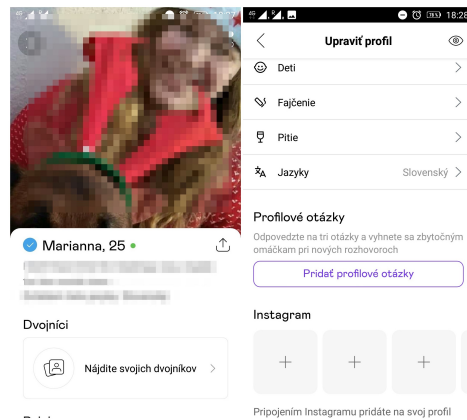


Figure 1.17: Badoo App: profile

1.6.2 Connections

Badoo is all about connecting with people. A user sees a profile of another user and by swapping to the left or to the right, he decides if he wants to be connected with him/her. The connection is created and allowed only if both users want to be connected. The list of contacts is connected with list of messages.

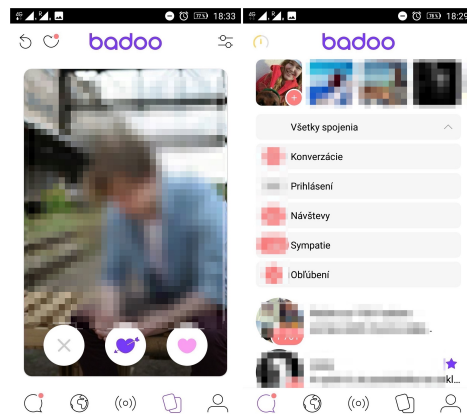


Figure 1.18: Badoo App: contacts

1.6.3 News Feed

News feed in Badoo does not exist in traditional social network way but there are two screens that may be considered news feed. The one screen contains a list of users with filter options and the second one contains video streams of users.

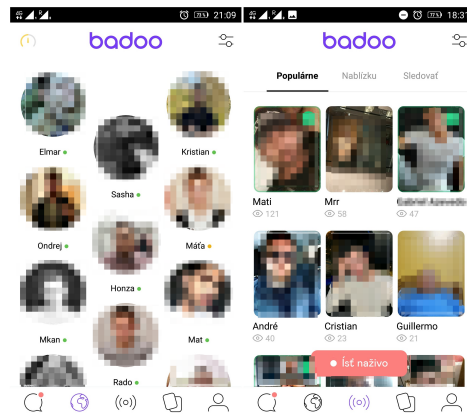


Figure 1.19: Badoo App: news feed

1.6.4 Groups

As Badoo is a dating app, there are no possibilities to connect more than two users.

1.6.5 Events

There is no functionality for events on Badoo.

1.6.6 Instant Messaging

Instant messaging in Badoo is accessible from the navigation toolbar and it contains not only messages, but all connections and information about other users who want to be connected with the user, so called "sympathies". The messaging itself allows user to send text messages with emojis but not with gifs, pictures which can be set to be visible for two, five, ten seconds or without any time limit and user can also send stickers.

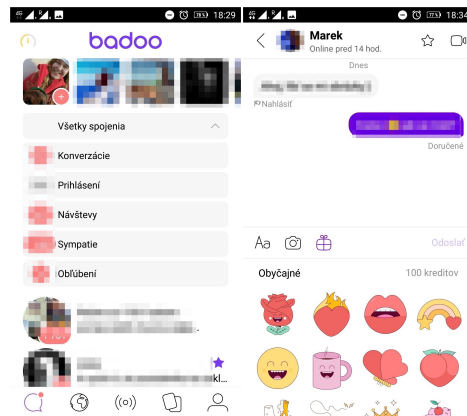


Figure 1.20: Badoo App: instant messaging

1.7 State-of-the-art Evaluation

Each of the analyzed social networks is very popular among millions of users. None of these is targeted for Erasmus students but it is often used by young people and they serve different purposes. Facebook connects people all around the world, it offers rich functionality and it is considered a gateway to social network life. Instagram, as a younger sibling, is liked more among young people and one of its advantages is, ironically, that the functionality is not so rich. The use is easier and user is not overwhelmed. Couchsurfing's purpose is similar to the one of my app, which is the reason why I chose to analyze this network - it connects a community of people abroad. And the last, Badoo is very simple dating app which allows user to connect with complete stranger.

As these apps are wildly used, their users are identified with the functions and the design and a good practice while designing a new app is not to get very creative. A completely new design may make a new app unusable so we want to decide what feature we want to make in similar way. In this section, advantages and disadvantages are summed up and there is a conclusion what is the best for the Erasmus student's app. These observations and conclusions might be influenced by subjective view.

1.7.1 Profile

- Facebook: The minus is that there are too many information asked, user is overwhelmed and there is no reason to fill it. The plus is that the information are not required.
- Instagram: The plus is that user is supposed to provide a reasonable amount of the information and all the information is easily displayed on

one page. The minus is that other users get less information about the user.

- Couchsurfing: The disadvantage is that a profile contains too much information and user needs to write a lot of text. The advantage is that user sees a percentage of how much he already filled so he is motivated to fill more and also, staying in another people's home is safe-sensitive so there is a good reason for big profile.
- Badoo: The profile contains a lot of information but it is done simply by questions with select so user chooses an answer easily.
- **Conclusion:** The profile in the app for Erasmus students will contain as small bit of information as possible not to overwhelm a user but to be able to connect him with contacts he might be interested in. Therefore the app will ask user to provide information about his name, home and exchange university and nationality. Another mandatory attribute will be a profile picture and non-mandatory attribute will be a description of user.

1.7.2 Connections

- Facebook: The advantage is that the two phases system of adding contacts is natural and simple, the button and states of the requests are obvious. An accepted request is displayed in a list of notifications. The main disadvantage is that user is not able to see the requests he sent to others next to the requests he was sent.
- Instagram: The main plus of the system of following is the simplicity of one phase - user follows immediately but it may make users demotivate to follow someone who is not following them.
- Couchsurfing: This functionality is similar to the Facebook solution but all the contacts and requests are in one screen.
- Badoo: The connections in Badoo are very specific feature, the fact that user is able to communicate with other users only when they had a "match" is a nice idea for a dating app but it is blocking a lot of connections that could have happened.
- **Conclusion:** The connections in the app for Erasmus students will be created as two phase process: a user is able to request another user to get connected and then the user has to wait for the another user to accept his request. There are three states: not connected, requested, connected.

1.7.3 News Feed

- Facebook: As there are any kinds of posts (pictures, text posts, videos, various links, notifications about their contacts' activity, etc) in Facebook news feed, user is able to see rich variety of information which is a plus. The minus of this is that it makes user think more and it is more overwhelming.
- Instagram: There are only picture/video posts which make user read and think less and it is more aesthetically pleasant. This gives Instagram user experience advantage. On the other hand, the variety is limited.
- Couchsurfing: The Couchsurfing "news feed" is divided into the parts with different purposes, user opens the one he needs. The filter is an advantage for user when he has an intention to search a particular thing but it is not motivating for a user to spend hours scrolling news feed.
- Badoo: Badoo does not have this feature.
- **Conclusion:** The news feed in the app for Erasmus students will consists of pictures so the posts are simple to watch.

1.7.4 Groups

- Facebook: The main advantage is that it allows user to connect people which are not in the list of contacts but they share a common interest. The main disadvantage is that as Facebook forced its users to install Messenger, a lot of people uninstalled their Facebook app and group notifications cannot be seen in Messenger.
- Instagram: There are no groups.
- Couchsurfing: There are no groups.
- Badoo: There are no groups.
- **Conclusion:** The groups will be supported only as group chats.

1.7.5 Events

- Facebook: The main plus of the Facebook events is the rich functionality but again, it may be a bit overwhelming.
- Instagram: There are no events.
- Couchsurfing: The main plus of the Couchsurfing events is the quick access and very simple and intuitive design.
- Badoo: There are no events.

- **Conclusion:** The main characteristics of the events for Erasmus students will be the simplicity accomplished by one-page design.

1.7.6 Instant Messaging

- Facebook: Very rich functionality, good design. I did not find specific negatives.
- Instagram: The only negative I have found during the research is that user does not have an opportunity to add an emoji via the app, he needs to use the phone keyboard.
- Couchsurfing: In comparison with Facebook, the functionality is really poor. For example no search, no sending picture... But the design is simple.
- Badoo: Very similar feeling and observations as couchsurfing, there are basic functions so the design is simple (plus) but not much to do (minus).
- **Conclusion:** As the survey showed, people use for instant messaging mostly Messenger so I want to offer to users of my app rich functionality so they are not motivated to switch to another app.

User Requirement Analysis

User requirements describe what the user need to do with the system and what activities that users must be able to perform. The correct determining what the user of an app wants is the crucial and difficult part of the process of designing an app. This is because the user is often not even aware of his needs and wants. The information user provides may be incomplete, inaccurate and self-conflicting. The user requirements must be often read between the lines. [18]

First step to determine requirements for a product is characterizing its target audience which is a group of people who the product will be focused on. In this case, Erasmus students are a target audience and user requirements will be based on a survey which was conducted with social network app users and exchange students.

2.1 Target audience

2.1.1 Target audience

Target audience represents a group of people who will use the product. It is an essential part of every user requirements analysis and also the designing process focused on user experience. Defining a target audience help designers with better focusing on meeting user's needs. To define who the target audience is and what the actual needs are, there is a need to answer questions like what generation the audience is, what current trends used in existing popular solutions are, what problems the users of existing solutions have, etc. The result should be common characteristics of users or finding some patterns. [19]

The Erasmus Program is a European Union student exchange program established in 1987. Target audience of my app consists mostly of Erasmus students and also students participating in other student exchanges or programs. Another, but smaller subset of the target audience may be people who

2. USER REQUIREMENT ANALYSIS

focus on hosting exchange students, e.g. people working or volunteering in such organizations or so called "buddies". Buddy is usually a student who helps one or more exchange students with anything related to their stay.

So supposed characteristics of the majority of the audience are:

- age 20-30 years,
- university students,
- smart phone users,
- social networks users,
- English speakers.

2.2 Survey

2.2.1 Definition

Management Study Guide defines the Survey method as the technique of gathering data by raising questions to people who may have desired information. Before conducting a survey, a formal questionnaire is prepared. Preparation is based on previous research about the topic of the survey. [20]

The main advantages of the survey method, compared to other methods (direct observation, experimentation), are a broader range of yield information. Surveys are effective, faster and cheaper than observation and the gained data is reliable. Also the formulation of questions with options reduces variability of results thus being relatively simple to analyze and interrelate the obtained data.

There are also few known disadvantages of the survey method and some ways to avoid them. Between disadvantages belongs unwillingness of respondents to provide information or to provide prettified answers. This can be avoided by making the responses anonymous. Another disadvantage coming up during conducting survey is caused by not well given questions in prepared questionnaire. The questions may be difficult to understand or understood by different respondents in different ways. To dodge this effect, the questions need to be formulated very carefully.

2.2.2 Questionnaire

The Survey method was chosen to gather data to study and understand social network usage and exchange students' everyday needs. The goal of the survey was to find out about social networks and messaging apps people use in general and about their pros and cons firstly in general and then it was aimed on exchange students.

As mentioned above, survey is more impersonal, general and fragile way of data gathering so the emphasis was laid on questions formulation. The main goals of formulation were not to suggest respondent any answers and to be for all kinds of people - for instance some people know what would they improve about social network apps and other people prefer to use some apps over another but they do not think about the reason.

Logical partitioning of questionnaire and question formulation is supposed to be simple and motivate a respondent to finish a questionnaire. To make questions easy and eliminate negative emotions, questions contains options. Not to limit respondents to options, respondent can choose multiple answers and also "Others..." option for custom answer. The questionnaire is divided to three main sections. First section deals with social network and messaging app usage and contains eight questions. Second section with eleven questions asks about student exchange experience. The section is conditional, if the respondent has not participate in any exchange program, the section is skipped. And the three questions of the last, third part, is targeted on buddies and people who work or volunteer in organizations organizing events for exchange students. The questionnaire is ended by a question demanding respondent's age. The questionnaire was created using Google Forms and can be found in attachment 6.

2.3 Survey Results

2.3.1 Social Networks & Messaging apps

First section devoted to using of social networks was filled by 225 respondents aged mostly between 20-29 years (176).

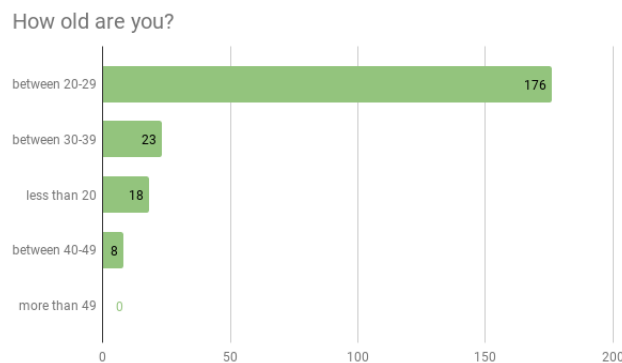


Figure 2.1: Respondents age

Not to overwhelm a respondent with too many options, I roughly divided social networks and messaging apps to two questions with options. The mostly

2. USER REQUIREMENT ANALYSIS

used social network according to our survey is Facebook chosen by 207 out of 225 respondents. It was followed by Instagram chosen by 133 respondents, LinkedIn with 112 people and Twitter use 77 respondents. Less than 10 people chose VKontakte, MeetUp and MySpace. Beside the given options, respondents often use networks as Reddit, Couchsurfing and Steam.

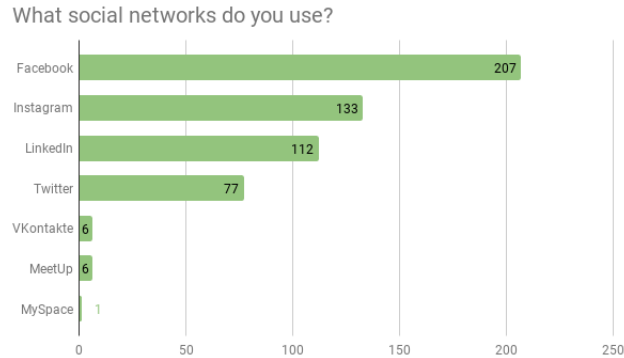


Figure 2.2: Social Networks Usage

The questionnaire was shared mostly on Facebook which can misrepresent the results and also results may differ in various countries and continents. The questionnaire was spread in European communities, mostly Czech and Slovak republic. But the interesting fact was the different number between Facebook and MySpace. Facebook, hatched by some college undergrads, has beaten MySpace and is now known worldwide and across all generations while MySpace, a corporation product, fell into oblivion. One of the mistakes of MySpace founders, according to Forbes, was trying to guide, plan and manage MySpace to determine the business's future. Facebook, on the other hand, was listening to the marketplace and let it decide where the business should go. [21]

Another interesting phenomenon is growth of Instagram community. As Facebook was first to the market and already consists of richer functionality, one could ask what motivates people to sign up to Instagram. The one reason may be trust issue caused by the scandal in 2018 when Facebook was accused of the mass, possibly illegal, collection of its users' information which has been leaked to third party. Also according to Business Insider's survey [22] users aged 18-25 prefer Instagram (36%) over Facebook (26%) and there are more reasons to choose Instagram over Facebook, than the privacy issue. Examples of reasons respondents mentioned are that "more of my friends use Instagram or WhatsApp now", or that Facebook had become "boring," [22] which can be connected with the fact that there are more and more elder people using Facebook and teenagers cannot use it freely. And according to some respondents Instagram wins over Facebook also in app's look and feel. [22]

The widest used messaging app according to the survey is Messenger chosen by 194 people which was expected as Messenger is instant messaging app used by Facebook users. As the secondly most used app was by vote of 143 respondents chosen WhatsApp followed by Instagram direct messaging and Discord app, which was primarily designed for gamers, with the same amount of votes (87). And as almost the same amount of people voted for Skype (86), the third place belongs to these three apps. From the given options, 64 people use Slack, 45 use Hangouts, 34 of respondents marked TeamSpeak, 30 people selected Viber and 12 stated they use SnapChat. Between answers written by respondents, messaging app used most often became Telegram with 19 occurrences. People mentioned also Mattermost, Signal or Jabber. While designing instant messaging function in the app for Erasmus students, I will take and inspiration from the mostly used apps.

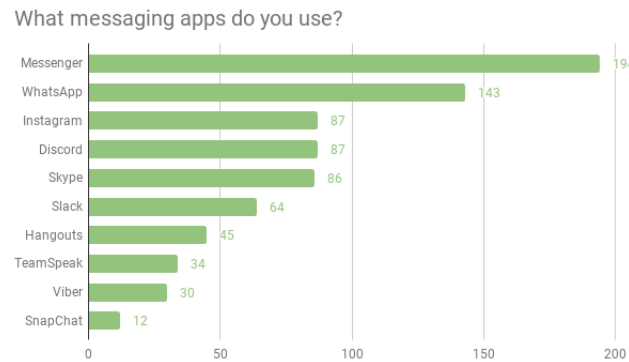


Figure 2.3: Messaging Apps Usage

In next question respondent were asked about reason why they use more than one social network or messaging app. More than 70% stated that they use the apps for different purposes and to stay in touch with different communities. About 30 respondents admitted they started to use another app because of the functionality and look and similar amount of people signed up in another app because their contacts started to use it. The social network designed in this thesis is meant for a special community of people, for exchange students and as the result showed, most of the people are willing to use new apps to stay in touch with a specific community.

2. USER REQUIREMENT ANALYSIS

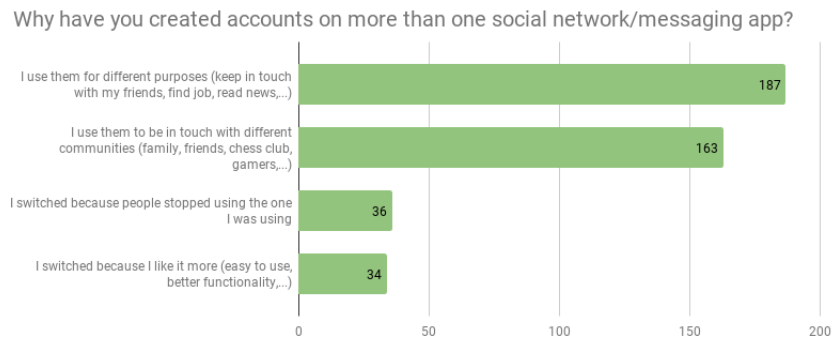


Figure 2.4: Reason to use various networks

The forth question collects answers about devices used by respondents while visiting social networks. This question allows selecting only one answers. Custom answers could have been added in "Other..." option. It turned out that 145 people choose smart phone over other devices. Number of people using laptop and computer is about 50 and no respondent prefers tablet for social networking. Most of people used the last option to express using laptop and smart phone the same amount of time. This results only confirmed the assumption based on the study results described in 1.1.4.

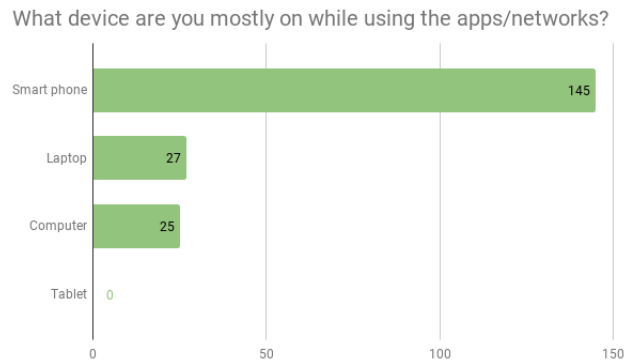


Figure 2.5: Preferred device

The typical messaging apps feature is sharing text messages. The extra features as sharing not textual content, calls, emojis, personal settings, etc. seem to be really enjoyable for users of messaging apps. All of the given features were chosen by at least 25% of the respondents. Interesting features added by "Other..." options were communication encryption and screen sharing. The instant messaging designed for Erasmus social network should support the majority of these favourite features.

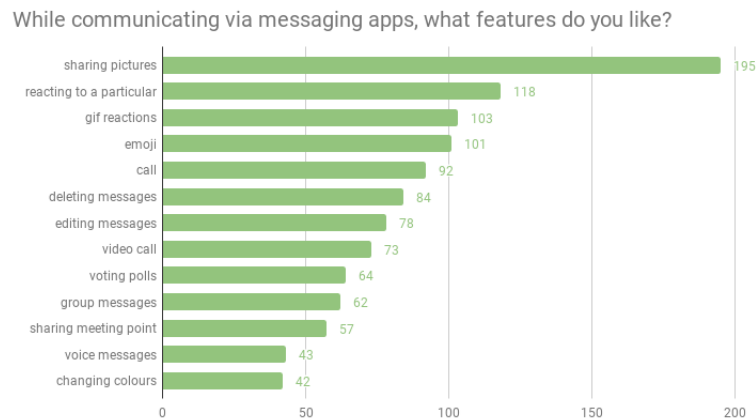


Figure 2.6: Favourite features

As the usage of social networks grows, real life meetings with people met on the internet become more and more common. Circa half of the respondents state that they have not hung out with anybody who they met online. The other half met people from various sites, mostly Facebook (50), dating apps like Tinder (20) and Badoo (10) and also from Couchsurfing (12) or MeetUp. In "Other..." option respondents mentioned mostly various gaming sites or community discussion forums. In Erasmus social network I would like to motivate people to hang out and meet each other. I assume people will meet mostly with the friends and students from their real life social network but I would like to support also meeting new people that are users of the app.

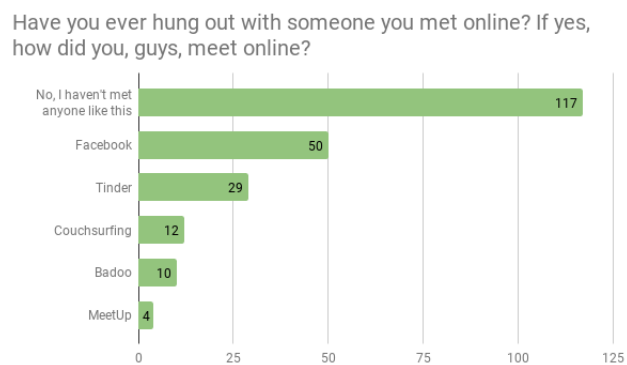


Figure 2.7: Hangout with internet stranger

The last mandatory question of the section was aimed on events and the way how people use social networks to get information about events they may be interested in. Results show that most of the people are offered the events

2. USER REQUIREMENT ANALYSIS

automatically or they are invited by other people. If they want to search an event, they filter events by the users they follow or they also use networks focused on events. As studying abroad rips a student out of his life and social group and the student is forced to hang out with strangers and meet new people more than usual, people taking care of such students prepare a lot of events and meet ups. Therefore, an event feature will be essential part of Erasmus social network.

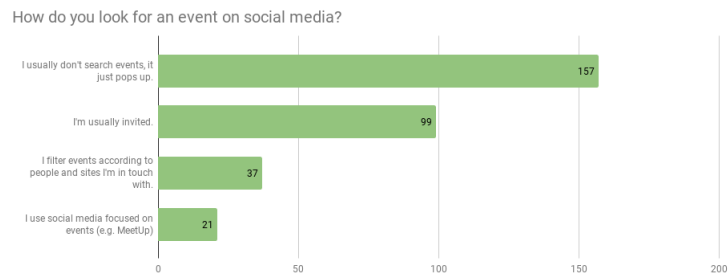


Figure 2.8: Event searching

In the end of this and every section, there is one voluntary question labeled as "EXTRA". It was meant to be an opportunity for people to write what they like and dislike about apps they use. The task was formulated as "Imagine a world in which only one app exists. Which one would you choose? And what would you change about it?" From the answers I expected respondents' insights but the formulation was aimed also on less motivated respondents who could write an one word respond. The ideas came and the most often repeated apps were Facebook, Instagram and WhatsApp. Facebook was very often criticized for being annoying, old-school, filled with "rubish", monitored and having security issues but praised for its rich functionality. Not rare suggestion for improving Instagram was combining it with WhatsApp or Messenger so I assume users want to improve mainly the Instagrams direct messaging.

2.3.2 Student Exchange Program

Even though the diploma thesis is aimed mostly on Erasmus students, I cannot imagine any reason why the app would not be used also by students participating in other exchanges. Therefore, the second part of the questionnaire collected data about student exchange experience in general. It was foregone by asking a respondent whether he had ever participated in an exchange program or studied abroad. About one quarter of the responses were positive and asked to fill questions about their experience. Out of 57 respondents 46 studied abroad after 2014, in the times when social networks have been already popular.

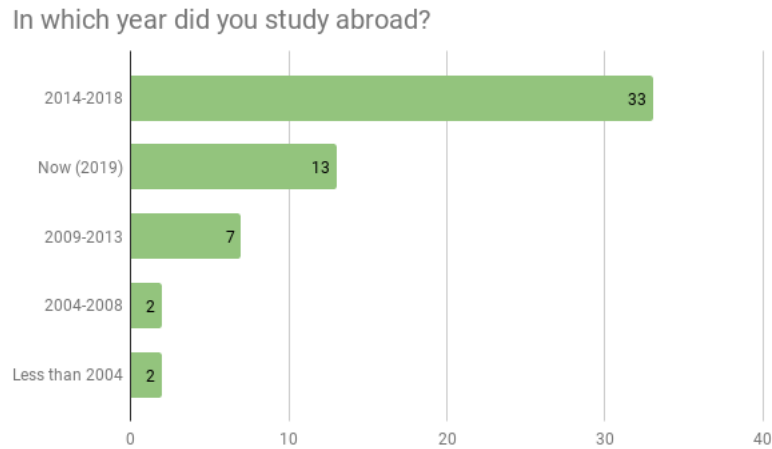


Figure 2.9: Year of an exchange

As was already mentioned, studying abroad gives a student an opportunity to meet new people, to experience local culture and to be "alone" in strange world but it is definitely a step out of one's comfort zone especially for more introvert people or people with strong attachment with their background at home. As the all familiar people are suddenly far away, an exchange student is forced to meet new people and build connections with people he met. According to the survey, people mostly build connections with people from school. The other assumptions, organizations, events, place where they live and parties were also true for at least a half of responding exchange students. Other places for meeting mentioned by few respondents were clubs or apps not exactly specialized for students (travellers, common interests, etc.).

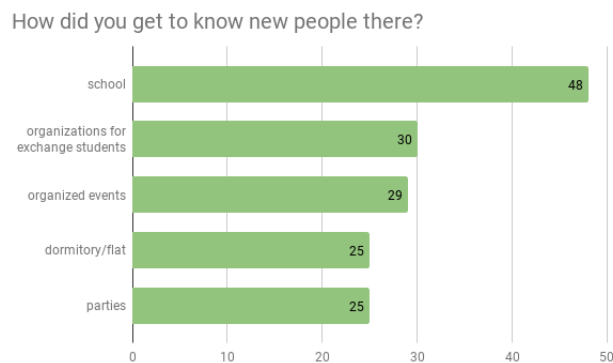


Figure 2.10: Meeting new people: place

While thinking all the places where exchange students can find an oppor-

2. USER REQUIREMENT ANALYSIS

tunity to meet new people, a doubt that there is a need for feature like this raised. So the following question asks about satisfaction with the amount of people a respondent has got to know. It turned out that circa 64% are satisfied with amount of the people they met, almost one quarter is satisfied but they would appreciate to meet more new people and 9 out of 57 people did not get to know enough people. Based on these answers, the feature could be helpful but it is not important enough to be the first main idea of the app.

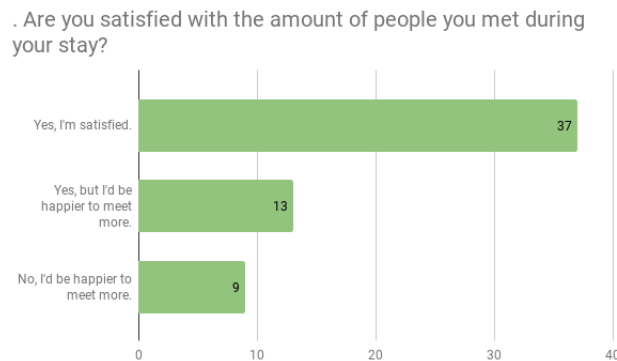


Figure 2.11: Meeting new people: satisfaction

In the first section we already found out about the social networks and messaging apps used by respondents. Not to demotivate respondents with the same questions focused on the time during an exchange, the question was specified as the difference between using their apps at home and while exchange. Almost 1/3 of respondents admitted that they installed a new app to communicate with their exchange contacts. The majority (7 people) installed WhatsApp. There were also some apps typical for a location, as Kakao (South Korea) or VKontakte (Russia).

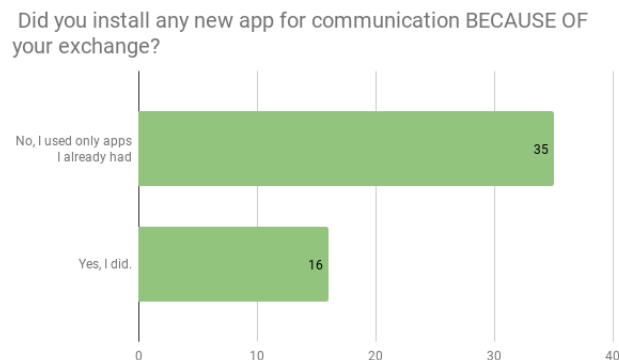


Figure 2.12: Special app

Despite of fact, that some people were forced to install another app to stay updated, the survey collected information about the mostly used messaging app which happens to be Messenger followed by WhatsApp.

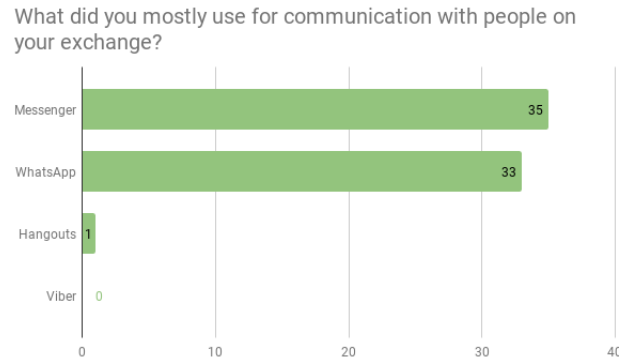


Figure 2.13: Mostly used app

Continuing in asking about exchange specifics in social media usage, the next question was aimed on increased use of a particular feature during an exchange in comparison with life at home. No change was observed by eleven respondents. Twenty people felt that they use group messages more than usually and with that was probably connecting reacting to a specific message. Usage of sharing point feature was scaled up while exchange of 12 people and eleven people used more of voice messages and video calls. We can assume that these features may be helpful part of an instant messaging in an exchange students app.

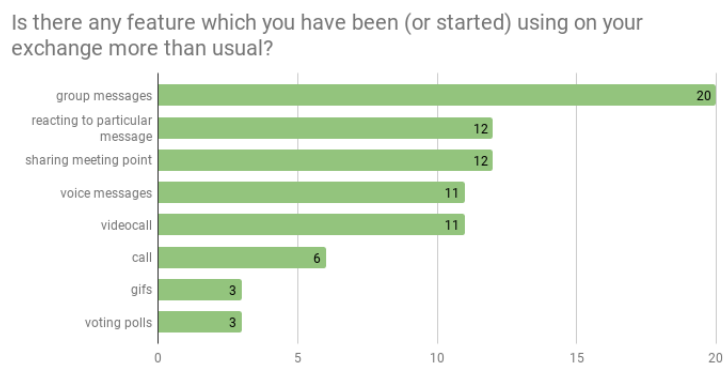


Figure 2.14: Feature used more frequently

As I already mentioned, as people living abroad are motivated to socialize, they tend to join events during exchange more than during living at home and

2. USER REQUIREMENT ANALYSIS

they find out about events mostly from their friends, as it results from the next question. They also get information about events on a social networks or they are notified by people working for exchange students organizations. The newly design app could be a place to easily gather all information about events.

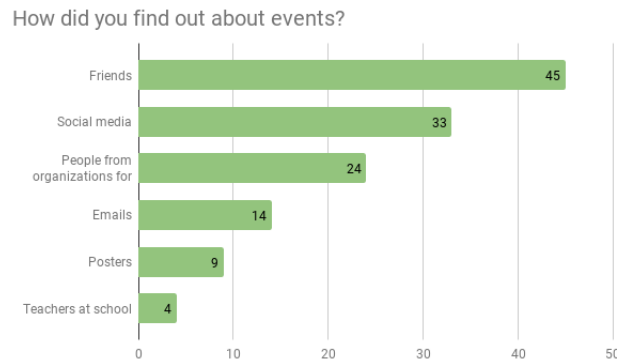


Figure 2.15: Events information

The survey showed that only about one third of respondents (18 people) joined at least one organization associating exchange students and 11 out of 57 asked people were members of ESN, the biggest student organization in Europe, but another 13 respondents attended at least one of their events.

Communication with all people during exchanges was rated as good by 50 people but some of them admitted that it could have been more efficient. About 15% of respondents were not satisfied with the communication.

The "EXTRA" question asked students about functions they would appreciate during they exchange. This was one of the most important questions because it gave the target users an opportunity to describe what they would like or what problems they are trying to solve.

Here is a list of the most common ideas collected thanks to this questions were

- a list of events,
- a feature for selling/buying/exchanging things needed during an exchange,
- a possibility to meet other exchange people in the easily,
- useful tips about the city, school, etc.

2.3.3 Organizers & Buddies

The third, shortest section is intended for all people who take care of and communicate with exchange students. There are 30 such people out of the whole respondents' count of 225 and they were given 3 additional questions which were similar to the ones in previous question but with respect to their role.

According to the survey, an app an organizer or a buddy uses to communicate with exchange students the most is Facebook with Messenger followed by WhatsApp.

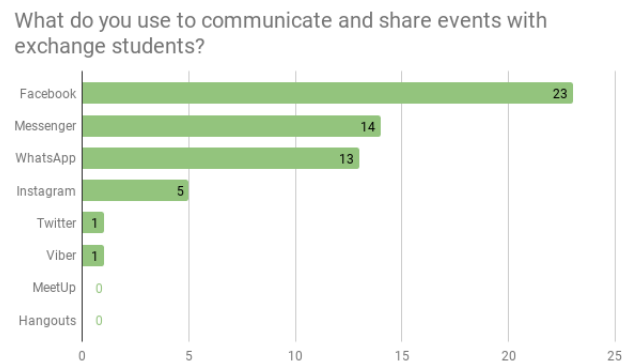


Figure 2.16: Apps used by organizers & buddies

The mostly used features are not very different when compared to the ones used by exchange student but the importance or the usage may slightly differ as it results in the "EXTRA" question of this section. For instance, as they are responsible for coordinating people the sharing point feature is a real help as well as polls or group messages where they can communicate with a large group of people at once.

2. USER REQUIREMENT ANALYSIS

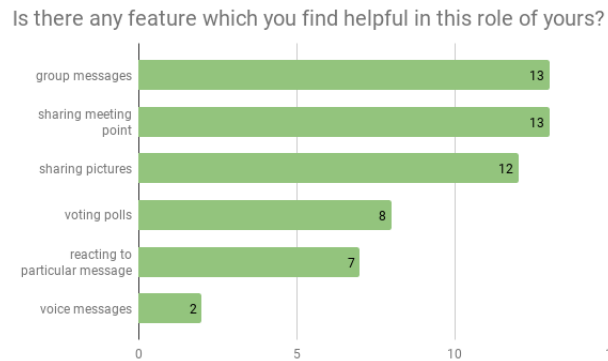


Figure 2.17: Features used by organizers & buddies

The survey ends with question about respondents age (2.1) and an "EXTRA" section for the respondent to have an opportunity to explain himself better or to add something, that he forgot, before the submission. This opportunity can make a respondent finish the questionnaire with a good feeling which may motivate him to forward it. However, this question did not bring any extraordinary answer which would enrich the survey.

2.4 User requirements

User requirements for the app have been written based mainly on the results of the conducted survey. The evaluation of the state-of-the-art was also taken into account to eliminate weaknesses and include the strength of a well-designed social network features.

As the apps brand was chosen a word "Hey" followed by an exclamation mark. I chose this word not only because it is short and simple but also because it is mostly used as a way of attracting someone's attention and also as a friendly greeting so it is in the harmony with the purpose of my app.

In this section, I will describe what requirements is e app supposed to meet in order to satisfy the needs of its target audience. There are the main features and how they work.

Registration & Log in

A user which is not logged in is allowed to log into his account or create an account in case he does not have one. To create a user profile, registration process is started. I divided the process into four parts.

In the first step, an unregistered user enters his name, username and e-mail or phone number. The username needs to be unique within all

the usernames in the database. The e-mail or the phone number is used for verification in the second step.

After clicking "Send code" button, the user continues with the second step of the registration where he is asked to enter the received verification code and to set his password which will be used for logging in the app in the future.

Clicking on the "Continue" button, the registration process gets to its third step where user is asked about the university where he studies, the university he is going to attend during his exchange and about his nationality. These three fields' type is "search" type so when the user starts writing, the options for input are offered.

During the last, fourth step, the user is asked to input his profile picture. The button for the input opens a window with an option to take a picture or to choose a picture from user's gallery. Beside the picture, there is an input text field where user is able to write few words to introduce himself to other users of the app. After submitting the step, the registration process is finished and the unregistered user becomes a registered user.

After whole registration, registered user is logged directly in the app and he has an access to all the functionality.

When the user has already registered, he is able to log in. The log in screen contains only two input fields - username and password. If the user forgot his password, he can click on the link which will send him an e-mail or a sms with the instructions how to set new password.

Hey! functionality

The Hey! feature allows user to meet other people very easily which is one of the features wanted directly by Erasmus students, as was found during the research. 2.3.2 The functionality itself may appear similar to the "event" functionality but organizing an event may seem as too much effort for face-to-face or spontaneous hangouts.

Thanks to this feature, a user is able to let other users know that he is available for hanging out. User is able to turn on and off his availability and to customize his hangout by specifying what he wants to do, what circle of people he wants to meet or when he wants to meet.

Under these settings, user sees the list of people who are available for hanging out. He is able to filter these users according to time, locality or whether they are connected or not. An item in the list contains information about hangout, such as purpose of the hangout, users who want to hang out, time and location. There is also a possibility to chat with the creator of the hangout and there is option "Hey!" which sends notification to the creator that the user wants to join his hang out.

Events

Functionality that supports joining, creating and managing event is another piece of the key functionality because various events are essential part of every exchange. A list of existing events was also suggested by the target users during my research. 2.3.2

The main event screen contains two tabs - the first one has a list of events already joined by the user and the second one displays all events available for user to join. There is some information about event name, organizer, time, location, and attendance in an item in the list and it is also enriched with the miniature of the picture. A user is able to filter the events.

Beside the information from the item, an event detail provides "Details" section with text information given by an event creator, list of users who want to attend this event and a discussion section.

There are three main buttons for various actions. "Join" button let others know the user intends to attend the event and after clicking the button, the event will be displayed in the "Joined" list. "Share" button serves to send the event to friends via instant messaging in the app or to share it on other social networks or just copy the link. The "Save" button adds the event to favourite events so user can easily find it when he decides he wants to attend it.

Messages

Instant messaging is essential part of any social network. To motivate user to want to use even instant messaging in our app, there was intention to provide a high standard of the instant messaging by implementing already existing features that are essential and liked by users and also new features that serves purposes of our app.

After a user gets to "Chat" screen, he sees list of his chats. Part of the screen is "Search" field that browse primarily the chats and secondarily the contacts. Part of the message item is the name and the profile picture of the contact, information about contact's status and about time when the message was sent and the first characters of the last message.

By opening chat channel, the history of messages with particular contact is displayed. Messages are sorted chronologically. There is a toolbar with various options for a content of the message in the lower part of the screen. As a content of a message is considered a location link for Google maps, a voice record, a picture, a Hey! event link, GIF, an emoji and, of course, a text.

Pics

Pics functionality is supposed to be basically Hey! apps news feed. It is supposed to allow user post pictures and see pictures posted by people in his contact list. The main screen of Pics contains all posts sorted by the latest. The user is notified if he has already reached the spot where he seen the posts.

A post contains the added picture in size which will give maximal view for a user and fits a screen at the same time. Under the picture, there is a place with reactions and option to add an arbitrary emoji reaction by clicking a "plus" button. Below the panel, there is an information about who posted the picture, picture's description, date and time of posting. Every post contains also section with comments and option to leave a comment. Share button allows user to share a particular post with another user via message in Hey! app or via other social networks. Save button saves a post in user's personal album in Hey! app.

More functionality

There are few more functions which are not so important and will not be used so often according to our research so they are included in a set called "More" which is the last icon in the main toolbar.

Contacts displays a list of user's connections. User is able to search in the list, to add a new contact to display a profile of another user and to display his requests for creating a connection.

Tips&Advice section contains various tips logically divided into five categories: places, food&drinks, fun, school and others. User is able to help others by adding a useful tip.

Market section is meant to be a function where students are able to buy, sell or trade stuff. There is a list of items, search for this list and also add function. There are two buttons for every item in the list - to share the item and to buy the item. The buy creates a chat between the user and the seller.

Profile link in the menu leads to a detail of the user's profile. User is able to see the activity in the app, the information he provided during the registration process, he is able to edit this information and also to change his password. User is also able to log out from the app.

User is also provided by the list of his notifications which contains the messages about activity connected with him, such as connection requests status has changed, user was mentioned in a comment or he was joined for a hangout.

2. USER REQUIREMENT ANALYSIS

Settings, as the name says, contain some settings of an app connected with user profile and notifications.

The last function in this section is a full text search over Contacts, Events, Market and Tips&Advice modules.

User Experience

3.1 User Experience Design

The Interaction Design Foundation defines the user experience (UX) design as "the process of creating products that provide meaningful and relevant experiences to users. This involves the design of the entire process of acquiring and integrating the product, including aspects of branding, design, usability, and function." [1] The importance of UX design may not be visible because a product is created with or without the process. Good UX design leaves user with absolutely different emotion and is one that fills the gap between goals of business and user needs. [23]

A UX designer during the process considers product use. UX designer starts with examining the user's motivations for adopting a product and studies views associated with the ownership and use of the product and whether user can relate to a task performed with the product. The motivation is followed by the functionality of the product. The product should improve the task execution comparing with the current solution. And the last step relates to the design itself. The functionality is supposed to come in an accessible and aesthetically pleasant way. [1]

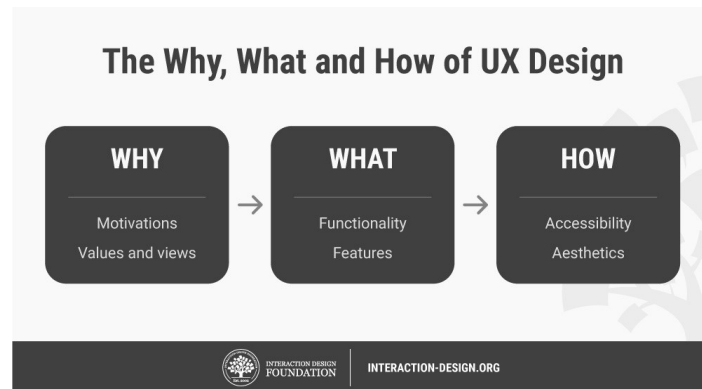


Figure 3.1: Product Use Examination Flow [1]

3.2 UX Design Process

UX Design invites users to process of a development of a product. To create good user-centred product, a process must be followed. Don Norman, the inventor of the "UX design" term, describes the process by four stages - Observe, Test, Iterate, and Learn. [24] Based on Norman, Interaction Design Foundation defined four steps which can be seen in a flow chart 3.2.

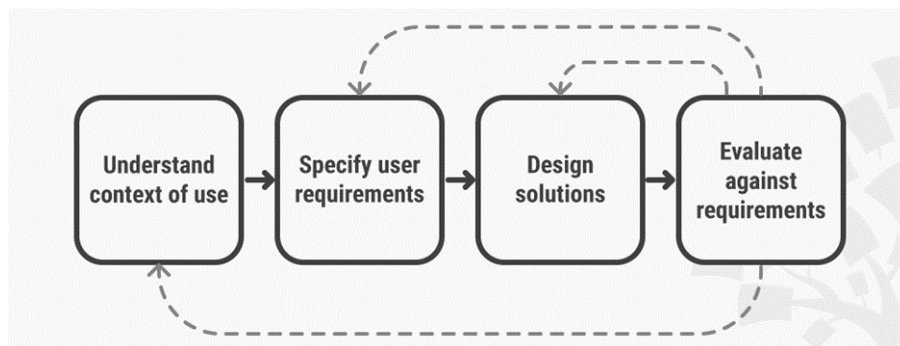


Figure 3.2: UX Design Process Flow [1]

Understand context of use

First stage consists of various forms of data gathering including observations, interviews, surveys, etc. The main goal is reached when UX designer understands the needs of a user, the tasks user is performing, the way how the task is performed using existing solutions, etc. During asking user some questions, a good practice to get valid data is not to ask user about what he needs. As Norman says, people often do not

realize what they need because they are used to what they are doing. Better way is to find a problem during observation or ask them about their tasks and how they complete them. [24]

Requirement specification

Next step to design a product with a focus on user is a specification of user requirements. After data gathering, a designer establishes problems and think of possible solutions for exposed problems. The requirements are expressed in a way that clear and prepared to be turned into a design.

To help a designer specify requirements and think of solutions faster, especially while working in a team of more people, a concept of personas is often used. A persona represents a subset of the products most common target audience. It is being created while gathering data and edited while establishing requirements. The data and patterns to create a persona are gained mostly during interviews, observations or, when these are not an option, a persona can be also created based on a stakeholder insight and competitor analysis. The most important part is finding a patterns and characteristics. The personas should differ in characteristics relevant to the product. It is recommended to restrict number of personas to four. Persona has unique photo, name and description of its background and desires to impersonate a target user. And also a problems description is included as persona represents a problem a designer is trying to solve. [25]

Design a solution

Following requirements, a solution is designed. Designing a solution is commonly called prototyping. Prototyping can be defined as “a simulation or sample version of a final product, which is used for testing prior to launch.” The goal of a prototype is to simulate a product or an idea and test it with target users. It often reveals bad design and all areas that need improvement. The main advantage of prototyping is saving money - the idea of product and the usability is tested before investing both time and money into implementation itself. Also, the revealed errors can be redesigned, they do not need to be re-implemented. [26]

Related to prototyping, design fidelity indicates the amount of detail and functionality included in a prototype. The difference is made by interactivity, visuals, content, etc. According to this, we recognize two types of prototypes. [27]

Low-fidelity (lo-fi) prototypes are very simple and schematic concepts. The goal is to turn designer’s ideas into testable artifacts that can be

3. USER EXPERIENCE

used to collect and analyze feedback in very early stages. It can be done with pen and paper.

High-fidelity (hi-fi) prototypes are very close to the final product. They contain all the necessary functionality and all design components. Hi-fi prototypes are used to perform usability testing and identify design issues before implementation starts. It can be created with various tools, e.g. InVision, Axure, etc.

Both types have their pros and cons and they may be used both but in various stages, for various purposes, etc. Benefits of low-fidelity prototyping rests in focusing on concepts not graphics in early stages, the prototype can be edited real-time and it is accessible to everyone so the designer can gather ideas from people with no experience in the field. On the other hand, hi-fi prototyping defeats lo-fi prototyping in later stages because it is more familiar to users and because of rich functionality and design features it gives the designer detailed feedback that would not be possible with pen and paper. It is also more presentable to stakeholders.

Evaluation against requirements

The design process is closed by successful evaluation against requirements. The product design is evaluated by performing usability tests. As can be seen in the flow 3.2, evaluation may lead to any of the previous steps. Depending on the result of the testing, designer may make some changes in a prototype or re-evaluate user requirements or take another look on a user and his task. It may not seem likely, the bad testing results are not seen as a failure. It is preferred to find a concept error before implementation.

3.3 Nielsen's Heuristics

Jakob Nielsen, Ph.D., the king of usability (according to Internet Magazine), has invented several usability methods, including heuristic evaluation. [28] It consists of ten general principles for interaction design. These rules will be followed to create the social network for Erasmus students.

1 Visibility of system status

This principle discusses importance of appropriate feedback for a user. The user should be always aware of what is going on and in what state the application is.

2 Match between system and the real world

The layer through which user interacts with the system represents connection between user's and computer world. While communicating with

the back end, it should be designed containing analogies, words, phrases and symbols that user understands.

3 User control and freedom

Users may be afraid to not be able to undo a mistake he made while using a new system. This rule emphasizes on giving a control to user. User should always be able to see how to leave unwanted state.

4 Consistency and standards

This rule highlights the importance of using uniform words, actions, icons, etc. By creating and using patterns which make sense the user is not forced to think about the meaning when the app state changes.

5 Error prevention

Always better than good error messages is a good design which prevents an error from occurring. It can be done by clear instructions, giving users a confirmation option before they commit to the action, etc.

6 Recognition rather than recall

This principle debates the purpose of reducing user's memory load. Recognition refers to human ability to identify familiar object and understand it and recall stands for laborious remembering and retrieving details from memory. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

7 Flexibility and efficiency of use

An inexperienced user normally does not use system efficiently but when an user uses the system on daily basis and the system is functionality rich, user appreciates various accelerators, e.g. quickly accessible list of favourite actions.

8 Aesthetic and minimalist design

The saying "Less is more" finds its application also in design. Even the rich functionality must be put delicately and should not contain any redundant piece of information. Every addition decrease visibility and user's focus.

9 Help users recognize, diagnose, and recover from errors

When error occurs, it must be explained to user in understandable language and solution is suggested. Also, as mentioned above, the error state should be revertible.

10 Help and documentation

One of the UX design tasks is to make system intuitive, the less explanatory notes the better. But despite of analogies, metaphors, generally used and well known concepts, not every user might understand the

product automatically. Therefore, it is necessary to provide help and documentation so any information needed is simple to search, focused on the user's task, specifies steps to performed and not be too large.

3.4 Usability testing

Usability testing is a way to evaluate the ease of use of the tested product by testing it with real users. Users are observed by a researcher while they are completing prepared tasks. The researcher studies if there is any difficulty while the task execution. If more people encounter similar problems, the researchers take it into account and usually recommend to remove the issue. [29]

In order to save the money on the software development, the usability should be tested as soon as possible. The best practice is to test the design before the development has started or in its early stages. This is one of the differences between usability testing and traditional testing (bug testing, acceptance testing etc.). Another difference is that the traditional testing is done by a developer or quality assurance experts and the usability testing gives the development team a feedback from real users chosen from the target audience, which is a huge advantage. The results might be different because for example if the product is too "technical", it may be understandable for people working on its development but the target users may be people who are not good with technology.

The usability testing can be divided into two big categories: qualitative and quantitative. The quantitative testing is used when the product is working and, usually, already used. The data is gathered from the production. The qualitative testing is used as an evaluation during the design process to confirm UX team's decisions and to identify usability issues. During the usability testing of Hey! app, the qualitative method will be used. [30]

Lo-Fi Prototyping

As it was already described, low-fidelity (lo-fi) prototypes are very simple and schematic concepts used to collect and analyze feedback in very early stages. During the process of creating the lo-fi prototype, I have focused on the simplicity of the screens and the Nielsen's heuristic rules. To reach the best layout of used components, I have taken into account the comfort zones for the various phone sizes. That is why all the main functionality is accessible from the navigation toolbar in the lower part of the screen.

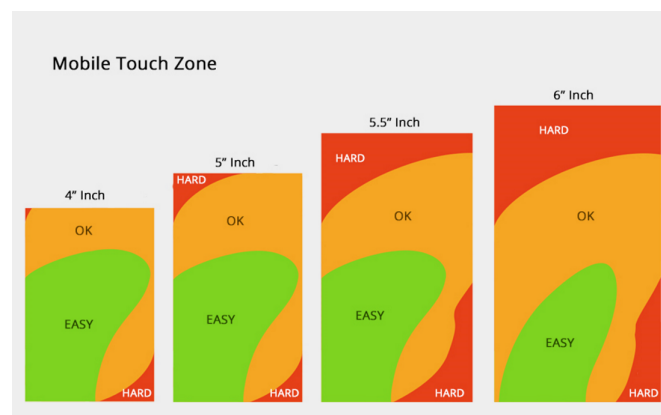


Figure 4.1: Comfort zones [2]

4.1 Lo-Fi Prototype

The user interface design is based on the user requirement analysis in the previous chapter. I will describe the screens, some reasoning behind the design and also some examples of specific use of the Nielsen's heuristic rules. These rules were taken into account while designing every screen, for example consistency across all the screens, the user's control, the error prevention and also

4. LO-FI PROTOTYPING

the matching between the real world or also standards used in other social network apps. The prototype was created in the InVision studio.

Registration & Log in

The first screen is about log in information, the second one is for the user verification, the third one asks user about his universities and nationality and the fourth one collects personal information about user.

According to the rule no. 8, the screen should not be overcrowded. Therefore, the registration process is divided into four steps. Also, using the rule no. 1, the visibility of the system status is kept thanks to the numbers of the steps in the header of the screen. User is able to get to the previous step any time so the user is in full control (rule no. 3). Also, I used the asterisk as a common sign for the mandatory attributes. Here is an example of the registration screens.

The figure displays four sequential Lo-Fi registration screens, each with a header indicating the step number (1/4, 2/4, 3/4, 4/4) and a back arrow.

- Registration 1/4:** Contains three input fields for "Your name *", "Your username *", and "Phone number/e-mail *", each with a "Type here..." placeholder. A note states "A verification code will be send to your number/e-mail." A "Send code" button is at the bottom.
- Registration 2/4:** Features an "Enter verification code" field with the placeholder "123456" and a "Set new password *" field. A "Continue" button is at the bottom.
- Registration 3/4:** Includes three selection fields: "Home university *", "Exchange university", and "What nationality you represent *", each with a "Select..." placeholder and a search icon. A "Continue" button is at the bottom.
- Registration 4/4:** Shows an "Add your picture *" field with a plus icon and a "Something about you..." field with a "Type here..." placeholder. A "Finish" button is at the bottom.

Figure 4.2: Lo-Fi: Registration 1-4

Log in happy path consists of only one screen which have been designed in a similar way as the registration screens.

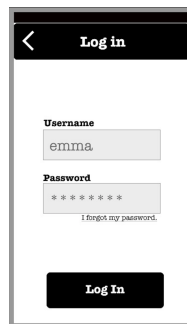


Figure 4.3: Lo-Fi: Log in

Hey! functionality

The Hey! functionality allows user to let other users know he is available for a hangout and also to see other users who are currently available. The design of this feature is a bit tricky because it is not very common so people are not familiar with it. For example, while designing an instant messaging, a designer needs to be familiar with the design of the popular apps because people are used to it and they like it. So while designing Hey! hangout function, I used a lot of text labels instead of icons so the users understand what it is good for. As it is one of the main functionality, the icon for "Hey!" is in the navigation toolbar. As the hang out availability switch I chose a toggle switch.

The screen is horizontally divided into two halves with the user's availability settings in the upper part and a list of available contacts in the lower part of the screen.

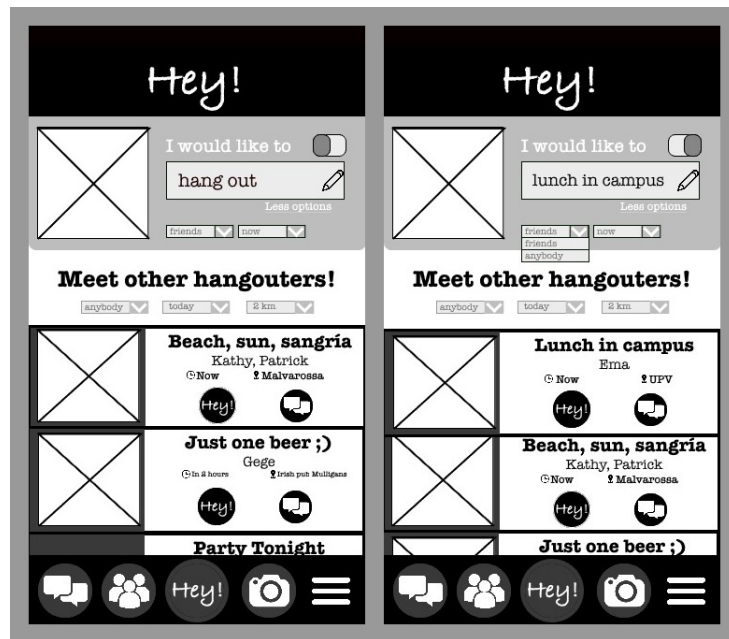


Figure 4.4: Lo-Fi: Hey!

Events

User can access the events functionality from the navigation toolbar. The first screen is the screen with the user's events. The items in the list contain all the essential information so the user does not have to open a detail of every event anytime he wants to see any piece of information. The detail contains actions and comment sections which is supposed to be less important than e.g. date and time of the event.

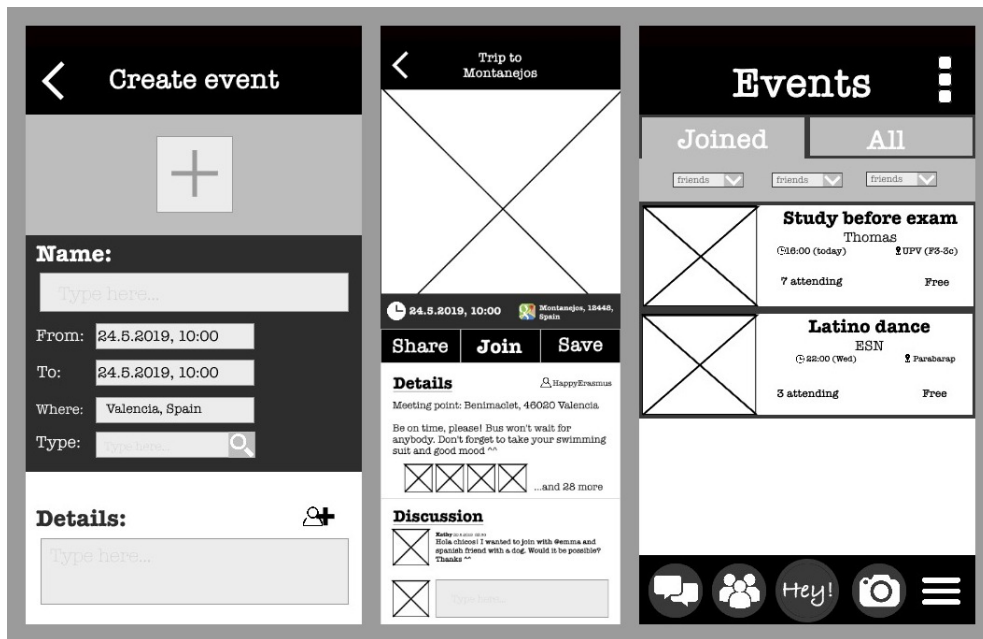


Figure 4.5: Lo-Fi: Events

Messages

Instant messaging design is supposed to fit as much functions as possible into two-three screens. The first screen contains list of the last messages. The items contains picture so the user does not have to read the name, he sees the graphical identification immediately. Also the status of the user is displayed. The chat tools, as can be seen in the detail, are displayed as well known icons to save space and also to save user's time from reading.

4. LO-FI PROTOTYPING

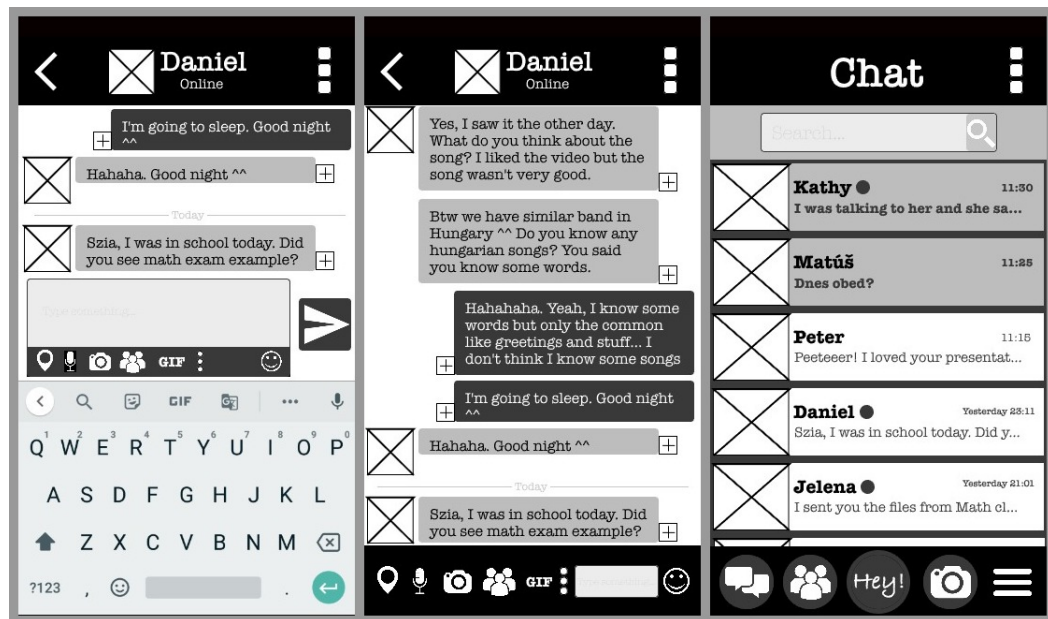


Figure 4.6: Lo-Fi: Messages

Pics

Pics screen is supposed to be aesthetically pleasant for Hey! users so the picture is maximized to the width of the screen. As the functionality is trivial, the user is navigated via icons, such as emoji or an icon for adding new post.

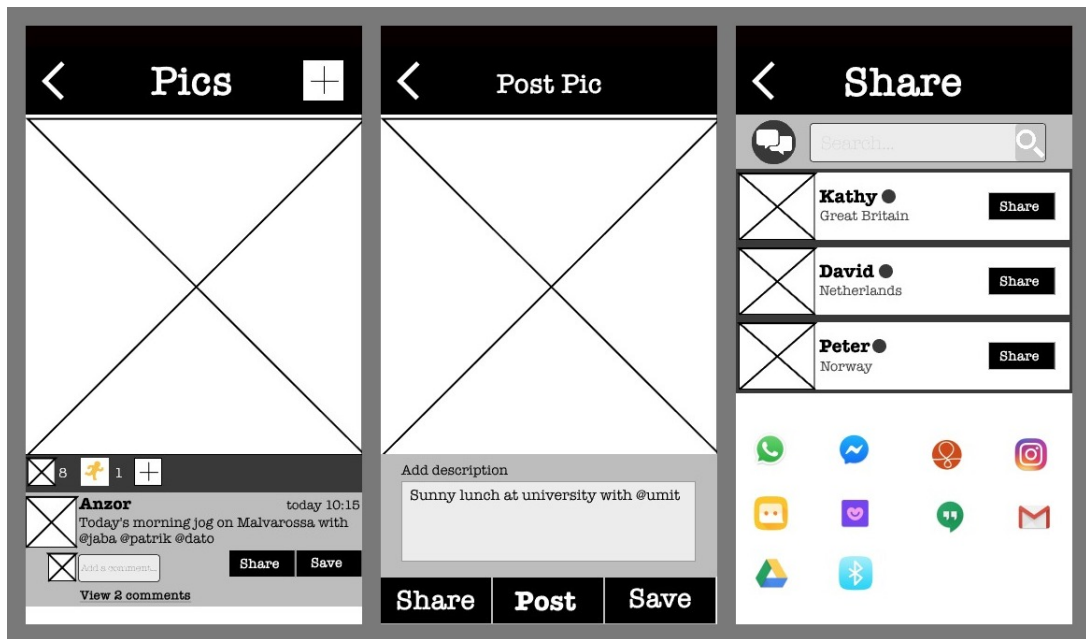


Figure 4.7: Lo-Fi: Pics

More functionality

The navigation toolbar should be simple and the trend is not having more than four-five options included. But in the same time, everything should be as accessible as possible. So I decided to choose four functions which are the most important and put them directly into the navigation toolbar. For the other, "less important" functions, I have created a section represented by a so called "hamburger" icon which opens a menu with all the functions. So the Contacts, Tips&Advice, Market, Profile, Notification, Settings and Search functions are accessible from the main toolbar but on the second level.

While designing these features, I focused on the rule no. 6, the rule about recognition. Every screen's header displays a name of the particular feature so the user does not have to remember his choice, he sees it immediately. There are some screen examples.

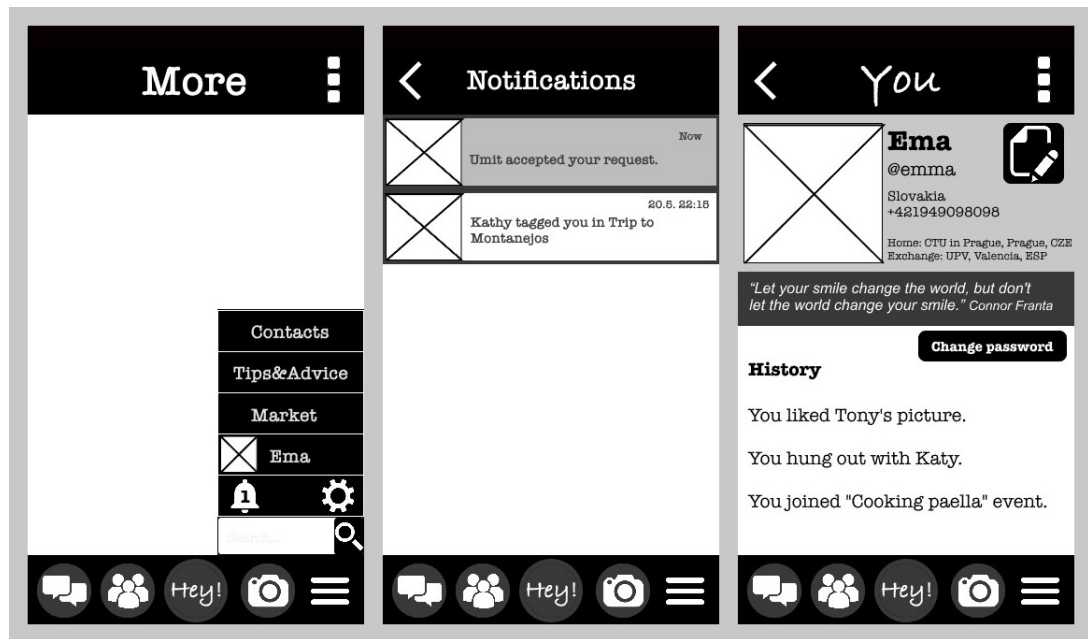


Figure 4.8: Lo-Fi: More

4.2 Lo-Fi testing

There are some rules and best practices which were followed in order to prepare smooth usability testing with the best results. At first, real users representing the target audience were chosen. According to Nielsen Norman Group, the best results are achieved by testing no more than five users. [31] So as stated in the target group characteristic, all users, who tested the app, were 20-30 years old, they were all university students or fresh postgraduates, they all use smart phones and various social networks and they all are fluent in English. I created list of fifteen tasks for testing which can be seen in attachment 6. The tasks were carefully formulated not to give direct instructions so the task itself was wrapped in small stories. The tasks lead user through various scenarios pre-modeled in the lo-fi prototype. The testing itself took place at Podolí dormitory and was foregone by friendly conversation so the users felt comfortable, relaxed and talkative. [32]

There are profiles of the users participating in the usability testing.

User A

The first participant is 24 years old female CTU student originally from Slovakia, who was going to participate in Erasmus program. She uses

social networks and messaging apps on daily basis and average time a day spent there makes about 4 hours. She uses mostly Facebook, Messenger, Instagram, WhatsApp, Twitter and Viber. She has never participated in usability testing.

User B

The second participant is 25 years old female postgraduate originally from Slovakia, who did not participate in Erasmus program. She uses social networks and messaging apps on daily basis and average time a day spent there makes about 2 hours. She uses mostly Facebook, Messenger, Instagram and WhatsApp. She has never participated in usability testing.

User C

The third participant is 26 years old male CTU postgraduate originally from Czech republic, who participated in Erasmus program in Spain. He uses social networks and messaging apps on daily basis and average time a day spent there makes about 1 hour. He uses mostly Facebook, Messenger and MS Teams. He has already participated in usability testing.

User D

The fourth participant is 20 years old female student from Turkey who is currently participating in Erasmus program at CTU in Prague. She uses social networks and messaging apps on daily basis and average time a day spent there makes about 1 hour. She uses mostly Facebook, Messenger, Instagram and WhatsApp. She has never participated in usability testing.

4.3 Lo-Fi Testing Result Analysis

The whole usability testing took around thirty minutes and all participants managed to complete almost every task. The results brought a lot of ideas and thoughts for changing the prototype so I consider the usability testing useful and benefiting and it just confirmed the importance of the usability testing with prototypes on its lowest levels before the beginning of the development.

The results of the usability testing of the every task are presented in following sections. The results contains a description of a found problem, an information about user who experienced the difficulty and a proposed solution by which the prototype will be modified or a comment with an explanation why it is not an issue and why the problem happened.

4.3.1

"You have downloaded the app and decided you want to try it out to see what it is capable of."

First task was supposed to test whole registration process. Users A and B completed the task without bigger problems. User C was satisfied by simplicity of the screens and by being aware of where he is during the process. User D, on the other hand, was a bit disappointed by the simplicity of the process but all of them have completed the task successfully. There are the observations and problems found while testing this path:

- **Problem:** "Sign up" button is bigger than "Log in" and often mistaken.
Users: A,B
Comment: There is an assumption that a user will see the very first screen very rarely because after registration process he will stay logged in continuously therefore the button "Sign up" is bigger.
Solution: To make clear that "Sign up" button leads to the registration process, the text will be changed.
- **Problem:** "Hey!" text in the initial screen is too big.
Users: C
Comment: The text is a logo of the app and it is supposed to be big.
- **Problem:** "A verification code will be send to your number/e-mail." text is weirdly positioned.
Users: C
Solution: The text will be centered.
- **Problem:** "I did not received any code. Send again." text could be placed lower and centered.
Users: C
Solution: The text will be edited so the "Send again" link is easier to be clicked on.
- **Problem:** "I did not received any code. Send again." disappeared after entering the code.
Users: C
Solution: The text will be changed after the verification is complete.
- **Problem:** "Set new password" could be without the "new" word.
Users: C

Solution: The text will be changed to "Set your password"

- **Problem:** "Enter verification code" misses an asterisk.
Users: C
Solution: The asterisk will be added.
- **Problem:** "Your nationality" instead of "What nationality you represent".
Users: C
Comment: A lot of students may study in different country than they come from so their home university differs from their nationality. This formulation should take the pressure off and give them an opportunity to choose a nationality they want to represent.
- **Problem:** "Exchange university" misses an asterisk.
Users: C
Solution: The asterisk will be added.
- **Problem:** User expected a choice to add more information about herself, e.g. hobbies, to be immediately connected with similar people.
Users: D
Solution: This will be added to the registration process as non-mandatory part.
- **Problem:** Set sending notifications to phone or email directly while registration process.
Users: D
Comment: This will be not added to the registration process as the user will be notified by the app itself.
- **Problem:** "Send the password to email or mobile phone because I might forget it."
Users: D
Comment: Sending plain password via e-mail or message is not safe. There will be a possibility to set new password in the app.
- **Problem:** "Include study field in home university to connect me with people with same study field."
Users: D

Solution: Study field will be included.

4.3.2

"Now you've been using the app for some time already since February, it is 24.5.2019 today and you have a new phone. You've installed the app. Get into the app to see your content."

This task was supposed to test login process so the users started again on the init screen. This task was completed by all users very quickly without bigger problems. There are some observations:

- **Problem:** Forgotten password link is too close to the input field.
Users: C
Solution: The link will be moved further from the input field.
- **Problem:** Upper- and lowercase letter 'i' in the "Log in" text in the title and the button.
Users: C
Solution: Text changed to "Log in".

4.3.3

"You remembered that you wanted to send your friend Daniel already existing event created by Thomas about group study for Math exam and you decided to do it now."

This task was supposed to test chat tools. This task was expected to be completed via chat options but every user wanted to share it via a detail of the event which was not modeled in the prototype (but is intended as can be seen in another event's detail). So there is need to model this path for next testing.

- **Problem:** Not intuitive via message.
Users: A,B,C,D
Comment: The assumption that this task will lead to this path from the Hey! screen was wrong but the tool itself will be just another option. This trivial path will be modeled in the prototype for the next round of testing.
- **Problem:** Event icon is not intuitive. It seems to be contacts.
Users: A,B,C,D
Solution: The icon will be changed.

- **Problem:** Missing "Home" icon in "Events" screen.
Users: C
Comment: There is no "Home" screen, user can navigate to all screens via the toolbar in the lower part of the screen.
- **Problem:** It is weird to click on "Hey!", he does not know that it means.
Users: C
Comment: The "Hey!" button is not so intuitive but this observation was made just by one user. As it is the name of the app so I would risk leaving it like this and continue with the testing with another users.
- **Problem:** What do the selects do?
Users: C
Solution: Make the selects bigger and add text help.

4.3.4

"You have time during boring lecture because you are not paying attention anyway and you are thinking about trips to take so you want to find something in Hey! app."

This task was supposed to test displaying of the event list. This task was completed without bigger problems.

4.3.5

"You've chosen a trip to Montanejos! It's today but you like this spontaneous trips so you decided to join the trip."

This task was supposed to test displaying of the event list. This task was completed without bigger problems but there were some observations.

- **Problem:** "Share" and "Invite" button seem to be the same.
Users: A,C
Solution: Delete "Invite" button and leave only invitation via "Share". Change the text on the button to "Invite".
- **Problem:** I would the "Save" and "Share" actions into the menu in the upper corner and replace them with tabs like "People", "Photos" or "Information".
Users: C
Comment: All of these parts are fit to a screen of an easily scrollable

detail. The "Save", "Share" and "Join" actions are supposed to be used the most so they are placed in the part of the screen which is supposed to be the best reachable part for a thumb as we saw in the picture. 4.1

4.3.6

"The trip starts in four hours and you have time after the lecture. Great time for a meal. You'd like to have a chat over a meal but your friends can't go with you because they are rushing to another lecture. You have a great idea! What about finding some new stranger to have a meal via the Hey! app?"

This task was supposed to test the "Hey!" functionality. This functionality is not very common and not very close to users of the most used social networks as Facebook or Instagram so the testing has shown more mistakes than in the other functionality. Also the formulation of the task gave the users a lot of freedom to be exploratory and not every path was modeled so it caused confusion and frustration. On the other hand, users found the functionality useful.

- **Problem:** I do not know if the functionality is on or off.
Users: A,B
Solution: The availability status will be differed by colours in high fidelity prototype.
- **Problem:** Users were trying to click on items in the list on the Hey! screen.
Users: A,B,C,D
Solution: After clicking on Hey! item, display a window with a profile of the user who wants to hang out.
- **Problem:** More options are hidden.
Users: A,B
Solution: The options will be always shown and the link will be deleted.
- **Problem:** Turn on/off availability button could be a check box or something like this.
Users: C
Solution: As the functionality is not so trivial, the radio button was replaced by a button with "Become available" label.

- **Problem:** The pencil icon is not intuitive.
Users: C
Solution: The icon will be removed.
- **Problem:** The functionality is not clear.
Users: C,D
Solution: The texts on the screen will be rephrased to better imply what it means.
- **Problem:** Notification was not very well visible.
Users: A,C
Solution: The visibility of notifications will be increased.

4.3.7

"Some "Umit" had answered that he wanted to join you for lunch. You've had a really nice lunch and you want to add him to your contacts not to lose touch with him. "

This task was supposed to test "Contacts" screen and a process of adding a new contact. User A completed this task without problems, other users needed help so there are some design problems to solve. For instance, every user clicked on the Events icon at first. But this problem was already mentioned above.

- **Problem:** I would use search instead of the "New contact" link.
Users: B,C,D
Solution: Include "Search" into the process of adding new contact.
- **Problem:** Plus button instead of menu.
Users: B,C,D
Solution: Add Plus button to add new contact.
- **Problem:** While searching a contact, '@' is redundant.
Users: C
Solution: The '@' will be removed from the search.
- **Problem:** When the list is empty, a message about it will be displayed.
Users: C
Solution: A message will be added.

- **Problem:** Notification was not very well visible.
Users: A,C
Solution: The visibility of notifications will be increased.

4.3.8

"Few hours later, you're sitting in the front seat of the bus to Montanejos. You hear loud people from the back of the bus but the person next to you is sleeping and you don't want to disturb him. To make the time pass faster, watch your Erasmus friends' posts in the Hey! app. Let Anzor and other boys know you've seen their post by adding an emoji reaction."

This task was supposed to test displaying of the posts and also adding an emoji reaction to one of them. The task was completed by all users after a little help with finding the correct screen.

- **Problem:** The camera icon is absolutely not intuitive.
Users: A,B,C
Solution: Icon will be changed.

4.3.9

"After while, you decided to add a picture with Umit because you'd had some really nice time with him. You want to make the picture public for your friends and also save it to your personal album in the app."

This task was completed by all users. There are few observations and problems:

- **Problem:** The camera icon would be better than the plus button.
Users: A,C
Solution: Icon will be changed.
- **Problem:** The Share, Save and Post functionality is too much. What does it even mean? "Save" is not useful.
Users: A,B,C,D
Solution: Remove the saving functionality and leave only the "Share" button.
- **Problem:** Is it already posted?
Users: B,C,D
Solution: Add a message that the post has been published.

4.3.10

"With your new phone, you bought also spanish SIM card and you want to set it as your Hey! number."

All of the users had the same problem during testing this task. Everyone expected the functionality in "Settings", not in "Edit profile" section. So this is a great adept for change.

- **Problem:** I clicked on settings and I was surprised it wasn't there.
Users: A,B,C,D
Solution: Move it to Settings.

4.3.11

"Another idea of yours was to organize a birthday party because you have birthday 30th of May and yaay!! It's Friday! So great day for having a party. Use Hey! to do so. At first you want to invite Kathy, Peter and Daniel and discuss it with them before you invite other people."

During testing of this task, a lot of stuff were supposed to be filled in prototype so the task should be easier for future testing. And also the InVision app did not work properly while testing with user D, so it was a bit stressful. But despite of all these problems, users completed the task and these problems were found:

- **Problem:** Plus button instead of the inner menu.
Users: C
Solution: The menu will be replaced by add button.
- **Problem:** "Invite people" icon is placed too close to the Details input field.
Users: C
Solution: Relocate the icon.
- **Problem:** Is it already created?
Users: A,B,C
Solution: Add a message that the event has been created.
- **Problem:** I would expect a category of the event.
Users: D
Solution: Change "Type" text to "Category" label.

4.3.12

"Share the event with Kathy."

This task was completed without bigger problems.

- **Problem:** The "messages" icon next to search is weird.
Users: C
Solution: Delete the icon.

4.3.13

"Next day, finally home you found out that your pan is damaged and you can't cook food using it anymore. You're staying in Valencia only for 1-2 month more so you don't want to invest a lot of money into a new pan. Your friends told you that they bought some of their stuff via Hey! and you decided to try it and see if you are lucky."

This task was supposed to test buying new stuff via Hey! app. The functionality is not trivial but every user completed the task successfully. Also this task was appreciated by users and marked as useful.

- **Problem:** Search did not work.
Users: B,C,D
Solution: Create the path in the prototype.
- **Problem:** The functionality is hidden in "More" menu.
Users: D
Comment: This functionality is one of bonus features, not one of main features.

4.3.14

"Check your notifications in Hey! app."

This task was supposed to test if users notice their notifications easily. It was completed by all users.

- **Problem:** If I had a new notification, I'd like to have it more visible.
Users: C
Solution: The visibility will be increased also by colours in hi-fi prototype.

4.3.15

”Log out from the app.”

This task was supposed to test how users search for log out process. It was successfully completed by three users but all of them expected to see it immediately in the menu. However, the log out is expected to be used minimally because every user has their own phone with their own app therefore there is no reason to log out on daily basis but the functionality will be moved to the settings so it is more natural.

4.4 Lo-Fi Testing Conclusion

The lo-fi prototype usability was tested with four users and it discovered 49 issues or ideas for an improvement. After the result analysis, 40 out of 49 issues were evaluated as problems and a solution was designed for each one of them. The 9 out of 49 issues were decided to remain the same and tested again. The changes based on this analysis will be made directly in a hi-fi prototype which will be used for the next round of the usability testing.

Hi-Fi Prototyping

High-fidelity (hi-fi) prototypes differs from the lo-fi prototypes by the fact that graphic components are included and it is very close to the final product.

5.1 Hi-Fi Prototype

The hi-fi prototype of Hey! app was created according to the tested lo-fi prototype. Every screen of the hi-fi prototype is based on its lo-fi model and it differs in two aspects: first, color and graphics which is absent in the lo-fi prototype and the second, implementation of the solutions of the problems found during the lo-fi usability testing. There are some examples of the hi-fi screens, the full prototype is attached on the CD. This prototype was created in InVision Studio as well.

5. Hi-Fi PROTOTYPING

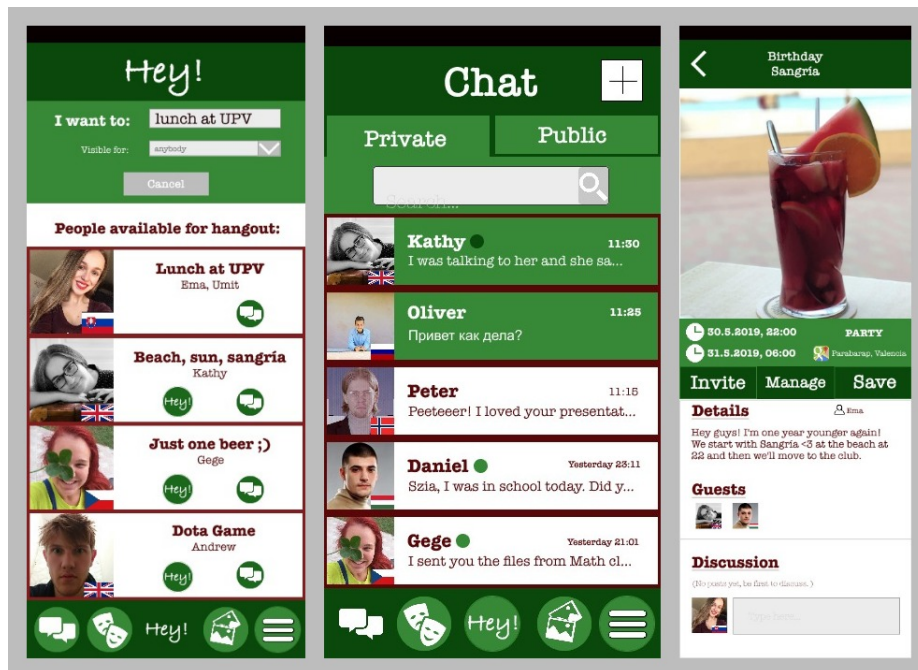


Figure 5.1: Hi-Fi Preview 1

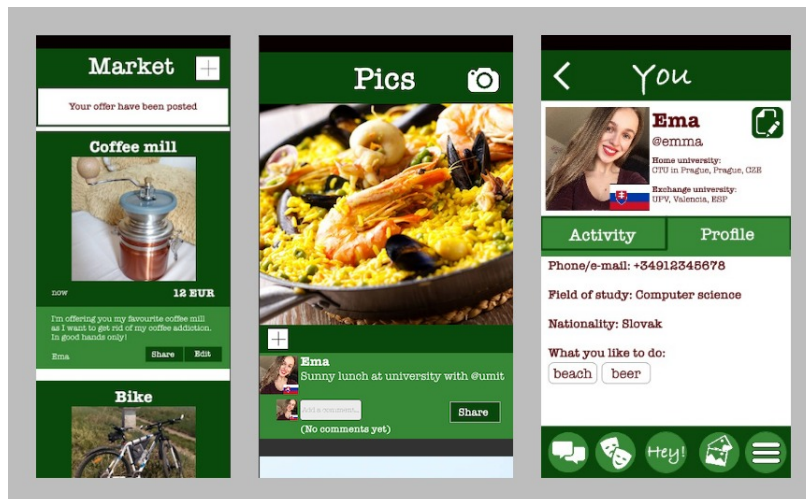


Figure 5.2: Hi-Fi Preview 2

5.2 Hi-Fi Testing

The purpose of the usability testing of the hi-fi prototype is to find out if the design is still intuitive and user friendly and also if the issues were removed

by implementing the proposed solution. The testing was performed with the same users and the same test scenario as the testing of the lo-fi prototype.

5.3 Hi-Fi Testing Results

The hi-fi testing brought much less problems so it can be assumed that the solutions were proposed well. Although, there are some observations made while the hi-fi testing. The solutions of following problems were implemented in the third, final prototype.

- **Problem:** The "Log in" link is too close to the "Registration" button.
Users: C,D
Solution: The link is re-placed.
- **Problem:** The "I have forgotten my password." link is aligned to the right.
Users: A,C
Solution: The link is aligned to the center.
- **Problem:** While creating a new event, the green field with white camera icon is ignored.
Users: A,B,C,D
Solution: The color is changed to gray because all inputs are gray.
- **Problem:** Add red color to the "hamburger" icon so the user sees he has notification immediately.
Users: C
Solution: The red color is added to the hamburger icon.

Thesis Summary & Future Development

The result of my diploma thesis is an interactive, high fidelity prototype tested with real users chosen from the target audience. The final prototype can be viewed here [33].

Despite the fact that the design of the app prototype required a lot of work, I have many ideas for the future improvement and for the next development of the app.

- **Implementation:** The result of a design process is a hi-fi prototype. To realize the app, an implementation is needed. However, the UX research and the implementation should continue simultaneously because there is continuous need for the usability evaluation.
- **Verified users:** The app could be used by all schools, buddies and organizations connected with the Erasmus. These users would be assigned with special role for work with the regular students.
- **Usability testing:** The goal of my thesis was to test the prototypes twice. But the usability testing is recommended with every change of the app and also, there would be an opportunity for quantitative testing.
- **Continual analysis:** The app should be able to react to changes in the processes and in the target users' needs. Therefore, the continual analysis of user requirements and re-evaluation is needed.

Conclusion

The goal of my diploma thesis was to design a social network which will improve Erasmus students' lives abroad by simplifying the processes connected with the student exchange. The thesis was supposed to analyze processes and problems of the target audience, Erasmus students, and propose solutions to these problems. These solutions should have been implemented in a low fidelity prototype of the app and also, after the first round of usability testing, in a high fidelity prototype. The result of these processes was supposed to be a user-friendly, interactive, high-fidelity prototype.

All the goals have been fulfilled successfully. At first, design of the existing apps was studied. Next, to find the needs of the target audience and to look for an opinion about social network apps, I conducted and analyzed a survey. I provided an analysis of the results and created a list of user requirements. According to the requirements, I was able to design a low fidelity prototype which was tested with real users. The analysis of the testing results helped me to improve the prototype and create a high fidelity prototype. Usability of the high fidelity prototype was evaluated via the usability tests and the prototype was improved again.

With the amount of the existing apps, users can choose what they want to use. The usability testing is becoming more and more important these days and this thesis showed the importance of the UX design within the software development. The result of my diploma thesis is an interactive, user-friendly prototype of the social network app for Erasmus students. I spent a lot of time by designing the prototype and I think it is a good basis for the app development and implementation.

Bibliography

- [1] What is User Experience (UX) Design? Available from: <https://www.interaction-design.org/literature/topics/ux-design>
- [2] Mobile UI/UX Design Considerations for Outdoors and Visually Challenged. Jun 2018. Available from: <https://www.probeseven.com/blog/mobile-uiux-design-considerations-outdoors-visually-challenged/>
- [3] Mehrez, A. Once Erasmus, always Erasmus. Jun 2016. Available from: <https://esn.org/blog/once-erasmus-always-erasmus>
- [4] Vachova, L. Post-Erasmus depression? Be gone! Jul 2016. Available from: <https://esn.org/blog/post-erasmus-depression-be-gone>
- [5] Erasmus: Facts, Figures & Trends - European Commission - Europa EU. 2015. Available from: https://slidelegend.com/erasmus-facts-figures-trends-european-commission-europa-eu_59b3366c1723ddf2725ef169.html
- [6] Danah; Ellison, N. B. Social Network Sites: Definition, History, and Scholarship - boyd - 2007 - Journal of Computer-Mediated Communication - Wiley Online Library. Dec 2007. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1083-6101.2007.00393.x>
- [7] Enge, E.; Enge, E. Mobile vs Desktop Usage in 2018: Mobile widens the gap. Apr 2019. Available from: <https://www.stonetemple.com/mobile-vs-desktop-usage-study/>
- [8] What is a Facebook Profile? Available from: <https://www.bigcommerce.com/ecommerce-answers/what-is-a-facebook-profile/>

BIBLIOGRAPHY

- [9] Bshear@shearlaw.com. The Legal Definition of a Facebook Friend. Jan 2010. Available from: <https://www.shearsocialmedia.com/2010/01/the-legal-definition-of-a-facebook-friend.html>
- [10] How News Feed Works — Facebook Help Center. Available from: https://www.facebook.com/help/1155510281178725/?helpref=hc_fnav
- [11] Groups. Available from: https://www.facebook.com/help/1629740080681586/?helpref=hc_fnav
- [12] Gibbs, S. Why is Facebook trying to force you to use its Messenger app? Jun 2016. Available from: <https://www.theguardian.com/technology/2016/jun/06/facebook-forcing-messenger-app-explainer>
- [13] Rouse, M. What is Instagram? - Definition from WhatIs.com. May 2017. Available from: <https://searchcio.techtarget.com/definition/Instagram>
- [14] Erin. What Does Followers and Following Mean On Instagram? Mar 2019. Available from: <https://socialbuddy.com/followers-and-following-on-instagram/>
- [15] Instagram Help Center. 2019. Available from: <https://help.instagram.com/1750528395229662>
- [16] How Couchsurfing Works. Available from: <http://www.couchsurfing.com/about/how-it-works/>
- [17] Badoo Corporate - Everything about Badoo. Available from: <https://badoo.com/a/>
- [18] Business, User, and System Requirements. Oct 2014. Available from: <http://enfocussolutions.com/business-user-and-system-requirements/>
- [19] Uxplanet.org. How to Effectively Predict What Your Target Audience Needs. Apr 2018. Available from: <https://uxplanet.org/how-to-effectively-predict-what-your-target-audience-needs-e667bd5b6968>
- [20] Juneja, P. MSG Management Study Guide. Available from: https://www.managementstudyguide.com/survey_method.htm
- [21] Hartung, A. How Facebook Beat MySpace. Aug 2011. Available from: <https://www.forbes.com/sites/adamhartung/2011/01/14/why-facebook-beat-myspace/>

- [22] Hamilton, I. A. Instagram has avoided Facebook's trust problem, beating its parent as app of choice for Generation Z. Mar 2019. Available from: <https://www.businessinsider.my/instagram-is-more-popular-among-generation-z-than-facebook-2019-3/>
- [23] Tawakol, E. Good Design vs. Bad Design: Examples from Everyday Experiences. Feb 2018. Available from: <https://uxdesign.cc/good-design-vs-bad-design-examples-from-everyday-experiences-18a7d1ba002c>
- [24] Norman, D. Observe, Test, Iterate, and Learn (Don Norman) (Video). Available from: <https://www.nngroup.com/videos/observe-test-iterate-and-learn-don-norman/>
- [25] Talebook. How to create Personas, a step by step guide. Aug 2018. Available from: <https://uxplanet.org/how-to-create-personas-step-by-step-guide-303d7b0d81b4>
- [26] Cao, J. What Is a Prototype: A Guide to Functional UX. Jan 2016. Available from: <https://www.uxpin.a/studio/blog/what-is-a-prototype-a-guide-to-functional-ux/>
- [27] Esposito, E. Low-fidelity vs. high-fidelity prototyping. May 2018. Available from: <https://www.invisionapp.com/inside-design/low-fi-vs-hi-fi-prototyping/>
- [28] Nielsen, J. 10 Heuristics for User Interface Design: Article by Jakob Nielsen. Apr 1994. Available from: <https://www.nngroup.com/articles/ten-usability-heuristics/>
- [29] Rees, D. What is usability testing? Available from: <https://www.experienceux.co.uk/faqs/what-is-usability-testing/>
- [30] Budiu, R. Quantitative vs. Qualitative Usability Testing. Oct 2017. Available from: <https://www.nngroup.com/articles/quant-vs-qual/>
- [31] Nielsen, J. Why You Only Need to Test with 5 Users. Mar 2000. Available from: <https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/>
- [32] Morrison, C. 10 Simple Steps to Start User Testing Tomorrow. Mar 2017. Available from: <https://usabilityhour.com/start-user-testing/>
- [33] Gedrova, M. HeyAppFINAL. Jun 2019. Available from: <https://projects.invisionapp.com/prototype/HeyAppFINAL-cjx1xia0100zc5a01ed8lgu0w/play/efa572eb>

Acronyms

UX User Experience

ESN Erasmus Student Network

LO-FI Low-fidelity prototype

HI-FI High-fidelity prototype

Questionnaire

Quick Questionnaire about social networks

Hey, you!

Thanks for opening the questionnaire. My name's Marianna and I'm doing a small research about social media for my diploma thesis dealing with designing a network for Erasmus students so I'm collecting data about 2 fields: social media and exchange experiences.

The questionnaire is quite short with options, it may take 3-5 minutes.

I hope you'll enjoy it. :)

*** Required**

Social networks

1. What social networks do you use? *

Let's say "use" means you have an account there and you maybe open it every now and then or everytime you need it (e.g. LinkedIn when you need a job).

Check all that apply.

- ☐ Facebook
- ☐ Instagram
- ☐ Twitter
- ☐ MySpace
- ☐ VKontakte
- ☐ LinkedIn
- ☐ MeetUp
- ☐ Other: _____

2. What messaging apps do you use? *

Let's say "use" means you have an account there and you maybe open it every now and then or everytime you need it (e.g. Skype only for parents).

Check all that apply.

- ☐ Messenger
- ☐ Instagram
- ☐ WhatsApp
- ☐ Viber
- ☐ SnapChat
- ☐ TeamSpeak
- ☐ Discord
- ☐ Hangouts
- ☐ Skype
- ☐ Slack
- ☐ Other: _____

3. Why have you created accounts on more than one social network/messaging app? **Check all that apply.*

- ☐ I use them for different purposes (keep in touch with my friends, find job, read news,...)
- ☐ I use them to be in touch with different communities (family, friends, chess club, gamers,...)
- ☐ I switched because people stopped using the one I was using
- ☐ I switched because I like it more (easy to use, better functionality,...)
- ☐ Other: _____

4. What device are you mostly on while using the apps/networks? **If it's 50:50, feel free to write it to "Others..." :)**Mark only one oval.*

- ☐ Smartphone
- ☐ Laptop
- ☐ Tablet
- ☐ Computer
- ☐ Other: _____

5. While communicating via messaging apps, what features do you like? **Check all that apply.*

- ☐ sharing pictures
- ☐ voice messages
- ☐ call
- ☐ videocall
- ☐ reacting to a particular message
- ☐ graphic smiley faces
- ☐ giph reactions
- ☐ voting (sending question with options)
- ☐ sharing meeting point
- ☐ nicknames
- ☐ group messages
- ☐ changing colours
- ☐ editing messages
- ☐ deleting messages
- ☐ Other: _____

6. Have you ever hung out with someone you met online? If yes, how did you, guys, meet online? **Check all that apply.*

- ☐ No, I haven't met anyone like this
- ☐ Facebook
- ☐ Tinder
- ☐ Badoo
- ☐ Couchsurfing
- ☐ MeetUp
- ☐ Other: _____

7. How do you look for an event on social media? **Check all that apply.*

- ☐ I use social media focused on events (e.g. MeetUp)
- ☐ I usually don't search events, it just pops up.
- ☐ I filter events according to people and sites I'm in touch with.
- ☐ I'm usually invited.
- ☐ Other: _____

8. [Extra] Imagine a world in which only one app exists. Which one would you choose? And what would you change about it?

You can mix the best app with the best features of other apps to create the best cocktail! Describe whatever is in your mind.

Have you participated in exchange program?

9. *

Mark only one oval.

- ☐ Yes, exchange program, 1-2 semesters
- ☐ Yes, exchange program for cca 1-3 weeks
- ☐ Full degree abroad but no exchange. *Skip to question 21.*
- ☐ No, I haven't. *Skip to question 21.*

Study abroad

Hey, exchange person! :) I'm using past tense in the questions, I hope it won't bother you if you're on exchange now. Thank you all for your answers!

10. In which year did you study abroad? *

The intervals may not be ideal so if you studied abroad longer than the interval or multiple times or e.g. 2013/2014, you can choose the latest interval. Or if it's too complicated, you can explain it in "Others..."

Mark only one oval.

- ☐ Actually, I do now (2019).
- ☐ 2014-2018
- ☐ 2009-2013
- ☐ 2004-2008
- ☐ less than 2004
- ☐ Other: _____

11. How did you get to know new people there? **Check all that apply.*

- ☐ school
- ☐ organizations for exchange students
- ☐ dormitory/flat
- ☐ organized events
- ☐ parties
- ☐ Other: _____

12. Are you satisfied with the amount of people you met during your stay? **Check all that apply.*

- ☐ Yes, I'm satisfied.
- ☐ Yes, but I'd be happier to meet more.
- ☐ No, I'd be happier to meet more.
- ☐ Other: _____

13. Did you install any new app for communication BECAUSE OF your exchange? **If your answer is "yes", please, write the app's name in the "Other..." option.**Mark only one oval.*

- ☐ No, I used only apps I already had.
- ☐ Other: _____

14. What did you mostly use for communication with people on your exchange? **Check all that apply.*

- ☐ Messenger
- ☐ WhatsApp
- ☐ Hangouts
- ☐ Viber
- ☐ Other: _____

15. Is there any feature which you have been (or started) using on your exchange more than usual? **Check all that apply.*

- ☐ voice messages
- ☐ call
- ☐ videocall
- ☐ reacting to a particular message
- ☐ "giphy" reactions
- ☐ voting (sending question with options)
- ☐ sharing meeting point
- ☐ nicknames
- ☐ group messages
- ☐ Other: _____

16. How did you find out about events? **Check all that apply.*

- ☐ Friends
- ☐ Emails
- ☐ Social media
- ☐ Posters
- ☐ Teachers at school
- ☐ People from organizations for exchange students
- ☐ Other: _____

17. Have you been member of any organization for exchange students? **Mark only one oval.*

- ☐ Yes, I was member of several organizations
- ☐ Yes, I was member of one organization
- ☐ No
- ☐ Other: _____

18. Have you heard about ESN? (Erasmus Student Network) **Mark only one oval.*

- ☐ Yes, I have been member of the organization
- ☐ Yes, I haven't been member but I attended at least one event
- ☐ Yes, I heard about it but I did not get in touch
- ☐ No, I haven't heard about it
- ☐ Other: _____

19. Are you satisfied with the way you communicated with your exchange friends, people from organizations, etc.? *

Feel free to describe what you liked/disliked about the communication in the following question.

Check all that apply.

- ☐ Yes, it was ok.
- ☐ Yes, but it could be more efficient.
- ☐ Not really, it wasn't very good.
- ☐ Other: _____

20. [Extra] Imagine you have an "exchange student app" in your phone. What functions would you appreciate?

Let me know anything that you have in mind! If it's brainstorming key words or fairytale - I don't mind! :)

Are you an organizer or a buddy?

In this questionnaire: "Organizer" is a person who works, volunteers or helps exchange student organizations which organize activities, meetings and trips for exchange students and "Buddy" is officially assigned to an exchange student by university (or maybe organization) and helps the student with questions and needs.

21. *Mark only one oval.*

- ☐ Yes, both
- ☐ Yes, an organizer
- ☐ Yes, a buddy
- ☐ No, neither *Skip to question 25.*

Organizers, buddies

In this questionnaire: "Organizer" is a person who works, volunteers or helps exchange student organizations which organize activities, meetings and trips for exchange students and "Buddy" is officially assigned to an exchange student by university (or maybe organization) and helps the student with questions and needs.

22. What do you use to communicate and share events with exchange students? **Check all that apply.*

- ☐ Facebook
- ☐ Messenger
- ☐ Instagram
- ☐ WhatsApp
- ☐ MeetUp
- ☐ Hangouts
- ☐ Twitter
- ☐ Viber
- ☐ Other: _____

23. Is there any feature which you find helpful in this role of yours? **Check all that apply.*

- ☐ voting (sending question with options)
- ☐ reacting to a particular message
- ☐ sharing pictures
- ☐ voice messages
- ☐ sharing meeting point
- ☐ group messages
- ☐ Other: _____

24. [Extra] Could you shortly describe what you do in this role?

Thank you for all your answers! We're almost done. :) I'm interested in processes of connecting with people, what you have to do before the new students come, etc. What are pros and cons of apps you use? As a person who takes care about newcomers students to foreign country, what would be nice to have in an app for exchange students from your point of view?

About you

Welcome to the last part of the questionnaire. Thank you for being here till the end! :)

25. How old are you? **Mark only one oval.*

- ☐ less than 20
- ☐ between 20 - 29
- ☐ between 30 - 39
- ☐ between 40 - 49
- ☐ more than 49

26. [Extra] Anything in your mind?

The questionnaire is in the end... last chance to express yourself :)

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Testing Task List

Usability testing tasks

Thank you for helping me with testing my app. The whole purpose of my diploma thesis is to design an app which is not only useful but also makes you feel good while using it so I need you to tell me what may confuse you or what makes you feel a negative emotion. I've prepared some data to make it feel real so while testing this app, we will use a role play game. Here is a person description and a list of some actions you may want to do while being an Erasmus student.

Before you start reading, I would like to remind you that I am not testing you but we are testing the app, together. So if you can't find something or something is bothering you, it is a problem of the app and I will be more than happy if you point it out because need to solve it.

You are Ema, nice to meet you! You are Slovak student studying your third year at Czech Technical University in Prague. You study Software Engineering on Faculty of Information Technology and you decided to experience an Erasmus. As you love hot summer weather, you applied for summer semester at a technical university in Valencia, Spain. You've been lucky and they accepted your application! While the whole bureaucracy process before Erasmus, the hosting university in Valencia recommended you to install an app for Erasmus students.

0. You have downloaded the app and decided you want to try it out to see what it is capable of.

1. Now you've been using the app for some time already since February, it is 24.5.2019 today and you have a new phone. You've installed the app. Get into the app to see your content.

2. You remembered that you wanted to send your friend Daniel already existing event created by Thomas about group study for Math exam and you decided to do it now.

3. You have time during boring lecture because you are not paying attention anyway and you are thinking about trips to take so you want to find something in Hey! app.

4. You've chosen a trip to Montanejos! It's today but you like this spontaneous trips so you decided to join the trip.

5. The trip starts in four hours and you have time after the lecture. Great time for a meal. You'd like to have a chat over a meal but your friends can't go with you because they are rushing to another lecture. You have a great idea! What about finding some new stranger to have a meal via the Hey! app?

6. Some "Umit" had answered that he wanted to join you for lunch. You've had a really nice lunch and you want to add him to your contacts not to lose touch with him.

7. Few hours later, you're sitting in the front seat of the bus to Montanejos. You hear loud people from the back of the bus but the person next to you is sleeping and you don't want to disturb him. To make the time pass faster, watch your Erasmus friends' posts in the Hey! app. Let Anzor and other boys know you've seen their post by adding a reaction.

8. Afterwhile, you decided to add a picture with Umit because you'd had some really nice time with him. You want to make the picture public for your friends and also save it to your personal album in the app.
9. With your new phone, you bought also spanish SIM card and you want to set it as your Hey! number.
10. Another idea of yours was to organize a birthday party because you have birthday 30th of May and yaay!! It's Friday! So great day for having a party. Use Hey! to do so. At first you want to invite Kathy, Peter and Daniel and discuss it with them before you invite other people.
11. Share the event with Kathy.
12. Next day, finally home you found out that your pan is damaged and you can't cook food using it anymore. You're staying in Valencia only for 1-2 month more so you don't want to invest a lot of money into a new pan. Your friends told you that they bought some of their stuff via Hey! and you decided to try it and see if you are lucky.
13. Check your notifications in Hey! app.
14. Log out from the app.

Contents of enclosed CD

	readme.txt	the file with CD contents description
	MGedrovaDT.pdf	the thesis text in PDF format
	Prototypes.....	the directory of prototypes
	1st lo-fi.studio	the first version of the prototype (lo-fi)
	2nd hi-fi.studio.....	the second version of the prototype (hi-fi)
	FINAL (3rd) hi-fi.studio.....	the FINAL version of the prototype (hi-fi)